THIS ISSUE OVER 31,000 COPIES

# COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

FEBRUARY 1942

50 REOS

Another example of Reo preference among large fleet operators who demand the highest standards of truck performance and operating economy.

REO MOTORS, INC. Lansing, Mich.

MONARK SYSTEM

> A. E. MARTIN CHICAGO

MONARK

WE FX MODUS

FX MO

REO TAILORED TRANSPORTATION

## How the cup of a Timken Bearing is made



The finish of the Timken Bearing—shown to best advantage on the cup—is the finest surface finish known to modern bearing science. It is largely the result of the development of the profilograph—the first instrument of its kind capable of measuring surface irregularities to one millionth of an inch! The profilograph was developed by Timken in conjunction with one of the world's leading technical authorities. This instrument enabled Timken engineers to develop new methods of grinding resulting in today's finish—the world's finest.

### What this means to you . . . .



The finish on the Timken Bearing has definitely increased bearing precision, improved bearing performance, lengthened bearing life and reduced bearing wear to a non-measurable degree. Every automobile owner and fleet and bus operator want these advantages and get them in every genuine Timken Bearing—the only tapered roller bearing in existence with 44 years of experience behind it.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Service-sales Division

TIMEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



### COMMERCIAL AR JOURNA

with which is combined Operation & Maintenance Reg. U. S. Pat. Off.

Acceptance under the Act of June 5, 1934, authorized December 18, 1934.
Published monthly Member C.C.A.

Vol. LXII

Philadelphia February, 1942

No. 6

#### EDITORIAL DEPARTMENT

JULIAN CHASE, Directing Editor GEORGE T. HOOK, Editor

STANLEY GERSTIN HENRY JENNINGS H. KOHLBRENNER Managing Editor **Technical Editor Art Editor** EDWARD L. WARNER, JR. JOSEPH GESCHELIN

Detroit News Editor **Detroit Technical Editor** MARCUS AINSWORTH, Statistician L. W. MOFFETT & J. D. BROWNE, Washington News Editors

#### EDITORIAL CONTENTS

Copyright 1942, by Chilton Company (Inc.)

#### FEATURE ARTICLES

Washington Kunaround	17
Retailers Deliberate Deliveries	20
Summing Up Salvage	22
Rubber Ration Interpretations	24
'42 Retread Review	26
Low Octane Truck Tests	29
Eyes On the Future: Transmissions	30
Cloverleaf By-Passes Breakdowns	31
Diesel Operation and Maintenance	32
Emergency Transport Plan	34
Laundry Shrinks 6-Day Week to 5	35
Mayflower Maintenance	36

#### **SPECIFICATIONS**

Commercial Car Journal Truck Specifications ..... 51

#### DEPARTMENTS

	DEIARTMENTS	
CCJ Quiz		18
	**********	
Shop Hints	for Fleet Shops	25
Showcase of	New Products	40
CCJ Newsca	ast	44
New Truck	Registrations	59
Free Money	Makers for You	129
Advertisers'	Index	150

Automotive Division Jos. S. Hildreth, President and Manager Chase, Vice-Pres. G. C. Buzby, Vice-Pres. JULIAN CHASE, Vice-Pres.

OFFICES

Philadelphia—Chestnut & 56th Sts., Phone Sherwood 1424. New York—
100 E. 42nd Street. Phone Murray Hill 5-8600. Chicago—Room 916,
London Guarantee & Accident Bldg., Phone Franklin 4243. Detroit—
1015 Stephenson Bldg., Phone Madison 2090. Cleveland—609 Guardian
Bldg., Phone Cherry 4188. San Francisco—444 Market St., Room 312,
Phone Douglas 9867. Los Angeles—6000 Miramonte Bird., Phone Lafayette
5255. Washington, D. C.—Room 1061 National Press Bldg., Phone District
4877.

SUBSCRIPTION RATES: United States and United States Possessions and all Latin-American countries—\$2.00 per year. Canada and Foreign—\$4.00 per year. Single copies—25 cents.

Owned and Published by CHILTON COMPANY (Incorporated)

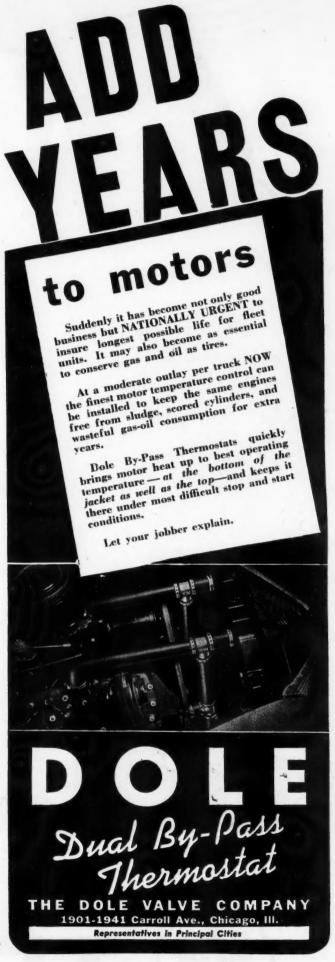


Executive Offices
Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

Officers and Directors C. A. Musselman, President

Vice-Presidents

JOS. S. HILDRETH
EVERIT B. TERHUNE
WILLIAM A. BARBER, Treasurer
JULIAN CHASE
P. M. FAHRENDORF
JVICE-Presidents
GEORGE H. GRIFFITHS
G. S. BAUR
J. H. VAN DEVENTER
C. S. BAUR
JOHN BLAIR MOFFETT, Secretary
G. C. BUZBY
HARRY V. DUFFY
CHARLES J. HEALE



FEBRUARY, 1942

When writing to advertisers please mention Commercial Car Journal

# IT GLEANSES



RETURN METAL DRUMS PROMPTLY . . . thus helping to make present supply meet industry's needs and releasing metal for War Needs



TEXACO

GOOD news for truck operators
—official and unofficial—filtered out of the Automotive
Branch of the new War Production
Board shortly after Knuckle-Down
Nelson publicly announced the new
set-up. The official news covered production of replacement parts; the unofficial news dealt with production of
medium and heavy trucks. It all adds
up to this: Washington continues to
look upon truck transportation with
respect and is doing what it can to
"keep 'em rolling" in the Victory
Program.

#### March Truck Quota Up

The unofficial news is a tip that comes from official quarters. It is to the effect that the March production quota of medium and heavy trucks (9000 lb. gross vehicle weight and over) will be about 1200 units more than the February quota of 53,435. This is particularly good news in view of the recent newspaper misquotations of a statement made by Mr. Eastman of the Office of Defense Transportation. At a press conference Mr. Eastman expressed a fear that medium and heavy truck production might be seriously curtailed after February. In expressing the fear he intimated the hope that it would be otherwise because of the need for all the transportation facilities the nation can muster.

Whether or not the ODT was instrumental in persuading the War Production Board that continued truck production is just as necessary as railcar production, it is a good omen that one of the first acts of the new War Board was to increase rather than decrease truck output.

(Just as this issue was about to go to press official corroboration of the above was received. The March civilian truck quota is 54,710 units.)

#### Parts Production Up

That good omen extends to the official act increasing the production of replacement parts for all automotive vehicles. On Jan. 22 the Auto-



## WASHINGTON

### RUNAROUND

Good News for Fleetmen . . . March Truck Quota Up . . . Medium & Heavy Parts Output Up . . . Light Truck Parts Boomed . . . Report On Rationing . . . Tire Situation Critical . . . Delivery Curtailment . . . Blackout Lights . . . Cooperative Army and Labor . . . Horses, Hoarding and Hullabaloo

#### by GEORGE T. HOOK

Editor, Commercial Journal

motive Branch of WPB announced that for the first quarter of 1942 production of replacement parts for medium and heavy trucks, trailers and bodies therefor would be permitted at the rate of 60 per cent of the number of units produced during the last six months of 1941. The increase is noteworthy in view of the

fact that production during the last half of 1941 was maintained at a high rate.

#### Light Truck Parts Boomed

The production of parts for light trucks and passenger cars was sanctioned on a tremendous basis. Manufacturers were given official per-



### WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 17)

mission to make 150 per cent as many parts during the first six months of 1942 as they sold during the entire year 1941. The belief was expressel that enough light truck and car parts would be produced by this order to last all of this year and the next. This would seem to imply that production of these parts will be stopped or curtailed at the end of the six-month period.

Keeping medium and heavy truck parts production on a quarterly basis and on a less expansive scale would seem to indicate that production of such parts will be continued for an indefinite time.

Regardless of their long-term implications, the immediate effect of the parts production announcements is that there is little doubt that authorities wish to make available enough replacement parts to keep in operation the trucks now in service.

#### Report on Truck Rationing

If the ban on the sale of all vehicles is not extended beyond Feb. 2,

rationing of vehicles is scheduled to begin on that date. Late in January it was still a toss up as to who would do the rationing of medium and heavy trucks 9,000 lb. gross and over. Eastman put in a strong bid to have his Office of Defense Transportation take over. There were indications that Henderson's OPA, which has charge of tire rationing, was willing to talk it over. Eastman, Henderson and John Rogers, motor transport's representative in ODT, were seen lunching together and conclusionjumpers were ready to believe that Eastman would have his way and that it was just a matter of arrangthe details. Although strongly advised to take on rationing of all highway transportation, which would include light trucks and passenger cars. Eastman is said to incline solely to medium and heavy trucks, trailers and buses. This would leave Henderson light trucks and cars.

If Eastman has his way the regional groups of the now defunct Central Motor Transportation Committee will doubtless figure in the rationing in a supervisory capacity. There is talk also that truck branches, distributors and dealers would be in on the rationing in an advisory and cooperative capacity. It remains to be seen.

FLASH! At the moment of going to press word reached this department that the ODT-OPA dispute had gone to the "higher regions," meaning the White House.

#### No Parts Rationing Yet

Nose-poking in authoritative quarters has failed to reveal any parts rationing plans. There has been no mention of rationing replacement parts. Perhaps this is because parts production has been permitted on a scale that is considered so liberal as to make neded parts available. Another factor may be the anticipated curtailment in the use of certain types of vehicles, particularly cars and light trucks, and even of medium trucks in a few home-delivery vocations.

#### **Tire Situation Critical**

In spite of the conflicting statements that have appeared in the daily press, the tire situation appears to be more critical than most people are willing to believe. A worsening of tire procurement difficulties is more likely than an improvement. Most fleet operators have shown no concern; they foresaw that tire price increases were inevitable and they protected themselves by stocking up long be-



by ROBERT F. BAHL

(Correct answers on page 84)

With battles raging in Europe, Asia, Africa and everywhere, you might as well get in a battle here. It's a battle of wits against these 10 Quiz Questions. Give yourself a score of 10 for each correct answer. Get all 10 right and you score 100—a "blitz-krieg;" 80 or 90 is still enough to rout the enemy; 70 means you're just holding your own; 60 or less—you'd hetter call for reinforcements.

1

Not counting lands acquired by invasion, can you tell us which of our infamous enemies has the greatest mileage of highways?

a. Japan b. Germany c. Italy

2

Trucks—trucks of every kind—are of extreme value in fighting off an invasion. What is your estimate of the number of

trucks available in the Philippines at the start of the Japanese invasion?

a. about 500

c. about 15,000

b. about 5000

d. about 200,000

ě

Are American trucks transporting Jap armaments? One of the figures below will give you the answer. What percentage of trucks in Japan are of American origin?

a. 5%b. 25%

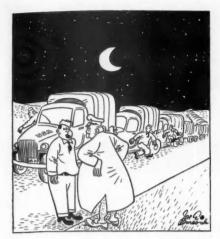
c. 65%

i% d. 90%

4

In another year this will probably be quite familiar to you, but right now can you tell us who, what, or where is "Guayule"?

- a. It is a shrub that grows in Mexico and California from which rubber can be made.
- b. He is the discoverer of Beryllium.
- It is a suburb of Detroit, the scene of a new arsenal to be built by General Motors.



"Sorry to pull in so late, General . . . we got behind a truck."

fore the pearl-handled Made-in-Japan knife back-stabbed Pearl Harbor. Until their inventories fall below onespare-per-truck they can have no dealings with tire rationing boards. But the moment those dealings begin. so will troubles begin. That's the opinion of men familiar with tirerationing red-tape. Rationing procedure, they say, calls for careful study by eligible truck users for the purpose of recommending practices that will not cause interruptions of truck transportation services.

Used tire stocks are depleted, we hear, and the pinch is already being felt on rubber stock for retreading. Retreading establishments are so rushed and retreading rubber stock is so limited that eventually essential transportation, which should include all trucks, will have to be given

a priority on retreads if it is not to be hampered.

#### **Delivery Curtailment**

Washington is looking to certain types of truck users to curtail their services for the duration. There is not likely to be any edict to this effect. No edict is necessary; the rubber shortage is expected to be a sufficient persuader. Curtailment campaigns are now in progress in various parts of the nation. Customers are being asked to carry packages that can be carried, to anticipate their needs and not to ask for special deliveries. So far most curtailment suggestions are, so to speak, curtailment at the expense of the customers. But that is logical because in our distribution set-up the customer has been a wasteful king who had to be served regardless because there was always someone who would cater to his whims in order to gain a competitive advantage.

#### **Blackout Lights**

So far the nation has been playing at blackouts. The citizenry is apathetic. Officialdom is both naive and stupid. Some of the air raid instructions make even school chil-

(TURN TO PAGE 46, PLEASE)

BOOKS

. . . a special selection made by the editors . . . to get your copy, just check the letter on the post card between pages 128 and 129 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

#### Axle Maintenance

The Timken-Detroit Axle Co. offers a valuable and timely manual titled "How Tires Affect Axles." The manual describes practical testing and maintenance experience for axles, brakes, tires and other vital points of trucks and trailers for better service and longer life. Check "A" on the postcard.

#### Palnut Pamphlet

Twelve pages descriptive of the selflocking nut available from the Palnut Co. Stitched for use as a manual and punched for insertion into a regular file, this material contains graphic illustrations of the many uses for a self-locking nut. Its features and advantages are also described. Check "B" on the postcard.

#### Operator's Tire Handbook

This handbook is issued by Goodrich to provide the latest data on truck tire maintenance. A 15-page section of the manual deals with "factors governing truck tire service." Included in a special section are charts and tables relating to proper inflation and loads, mis-matching, etc. Check "C" on the postcard.

#### Metallizing Booklet

This 16-page brochure describes the various applications of the metallizing process for renewing worn automotive parts. This salvaging method is particularly timely in view of parts shortages. The brochure is profusely illustrated showing the steps in rebuilding various parts. Check "D" on the postcard.

Two months ago, there might have been an excuse-but right now everybody should know that "camelback" refers to:

- a. Chrysler's new army tanks.
- b. A synthetic material substituting for leather in truck upholstery.
- c. Rubber used for retreading tires.

Most rubber manufacturers in America are now producing or working on a synthetic rubber of one kind or other. Each gives its own name to its product. Can you pick out the firm that has chosen the name, Ameripol"?

- a. Firestone
- c. U. S. Rubber
- b. Goodrich
- d. DuPont

Construction of Ford's giant bomber plant is proceeding 24 hours daily (under big floodlights at night) so that mass-produced four-engine bombing planes will be rolling off the assembly lines by spring. The question-tell us where this new plant is located?

- a. Detroit
- c. Ypsilanti
- b. Dearborn

- d. Baton Rouge

If you kept a particularly anxious eye on shortages in lead, alcohol, chlorine, and aluminum, the chances are that you would be a manufacturer of:

- a. Ethyl fluid b. Anti-freeze
- c. Batteries
- d. Diesel Oil

Where would you be most likely to find "1/2-ton, 4x4 trucks"?

- a. In the Army.
- b. On Chevrolet's assembly line.
- c. Delivering milk in Brooklyn.

#### 10

Let's make the last one a short one. What's

a "half-track" vehicle?

a. A truck that can be converted into a tractor for hauling a semi-trailer.

b. An army truck with wheels in front, tractor tread in rear.

c. A truck partially completed on an assembly line and shipped to local distribution points for completion.

AST month several thousand retailers from all parts of the country flocked to the Pennsylvania Hotel in New York City to attend the National Retail Dry Goods Association's convention Jan. 12 to 16. They came to get an answer to several perplexing questions, one of which was "How can deliveries be curtailed in order to save truck

equipment?"

The question was a whopper. The country had been at war for five weeks. In one brief moment the props were swept out from under a system of delivery services that retailers had spent years of time and millions of dollars for truck equipment to build up. To make matters worse, painstaking care had been expended in conditioning American consumers to the luxuries of multiple deliveries and now retailers had to reverse themselves overnight. Where they formerly asked, "Shall we send it?" they were now asking, "Will you take it?" knowing full well that the customer will have to take it-and like it, eventually.

A small but representative group of fact-seeking retailers filed into the special conference room to attend the delivery group session on the morning of Jan. 13. They came with one purpose in mind, and that was to learn what the next man intended to do about the crucial delivery situation. The meeting was presided over by Joseph Kord, operating superintendent of Filene's (Boston, Mass.), who wasted little time in coming to the main feature. He hoped to learn what his fellow operators were doing or planning to do to save tires, curtail deliveries, preserve equipment, eliminate special delivery services, etc. Scarcely stopping to draw breath he went on to express the group-felt opinion that the customer's reaction might determine the extent to which deliveries would be curtailed in the initial stages.

From the dearth of information it was obvious that the customer was king of the retailer's domain and the master as well as the subject of his psychology. None present was willing or able to testify to how much the customer could be induced to carry or to what extent delivery curtailment could be safely practiced. Retailers were not prepared to be blunt about it and tell the customers to take it or leave it; that is, not unless

RETAILERS
DELIBERATE
DELIVERIES

Store executives discuss problems of retailers at NRDGA meet and consider:

- 1. Delivery curtailment to save trucks
- 2. Cooperative delivery experiments
- 3. Drivers, mechanics and women subs
- 4. Preventive maintenance and war
- 5. The transportation outlook for 1942



by STANLEY GERSTIN

the operator next door and the one down the street did the same simultaneously.

Mr. Kord tried to ease the reserve of the group by revealing that Filene proposed eliminating Monday deliveries for the Boston area. He believed New Englanders would take this cut in service graciously and cited, as a basis for this assumption, the experience of a Boston milk company that restricted deliveries to three times a week with the approval of the Boston Board of Health and the cooperation of the public.

I. J. Brown, delivery superintendent of United Parcel Service, New York City, stated that his company tried eliminating Monday deliveries in picked suburban areas but found that packages piled up so seriously on

Tuesday that the congestion and confusion canceled out any possible benefits. The success of such a move, he thought, could only be achieved if the public would cut down on Monday and Tuesday delivery requirements. United Parcel had to put extra delivery units in service and an extra line-haul truck on the job on Tuesdays so that what the company saved on Monday was used up the next day.

#### **Delivery Curtailment**

It was apparent that many retailers were still toying with the idea of delivery curtailment without actually working out a specific program. The exception to this conclusion arose in the person of K. C. Kelley, store manager of Kaufmann Co., Pittsburgh, Pa.





"The story can now be told," he began, "inasmuch as Pittsburgh morning newspapers are carrying advertisements to acquaint the public with the facts. The Kaufmann store was curtailing its six-day delivery to three. It was doing the same for city and suburban deliveries, alternating the days so that city packages would be handled on Tuesday, Thursday and Saturday and suburban deliveries on Monday, Wednesday and Friday. Thus the ultimate aim is to curtail deliveries by approximately 50 per cent.

"Naturally Kaufmann realizes that a mere statement of intention is not sufficient to accomplish the desired purpose. Customer cooperation is absolutely necessary. In this respect the company made several experiments: one was to put a purchase in a bag and hand it back to the customer without asking if he or she wanted to take it. A few objected. Some asked for a rebate for their trouble. In other instances it actually resulted in increased deliveries because customers began insisting on getting service to the limit. However, we believe that by educating the public through the newspapers and with the aid of our sales clerks, the public will cooperate as a patriotic gesture."

Mr. Kelley explained that the three-times-a-week delivery in the city was for packages as well as for furniture and bulk purchases. Furniture and bulk would only be delivered twice weekly in the suburbs. The Kaufmann store has also inaugurated a practice of shipping packages to remote areas for delivery by local carters on a five-day delivery basis, eliminating Thursdays. These men have a 150-mile-a-day run and could not possibly cover more ground on a curtailed delivery week.

Continuing with details of the Kaufmann plan, Mr. Kelley revealed that his firm was cutting out midtown special deliveries by truck and running them by messenger boy. Even the messenger service was being discouraged by a charge of 25 cents which will be raised to 50 cents if necessary to further discourage this type of service. In the long run the company believed restricted service would bring some good, such as the elimination of deliveries on approval, returns, C.O.D.'s, etc., and a continuation of these benefits after the war.

An interesting point was revealed by Mr. Kelley when he admitted that originally Pittsburgh stores discussed a five-day delivery week but all stores wouldn't agree on it. Consequently, the Kaufmann store took the long and drastic step indepen-

Questions flew thick and fast upon completion of his remarks. The suggestion that delivery curtailment would eventually be cut 50 per cent brought up the question of "What about the drivers?" What about the union? How was Kaufmann going to meet this situation? Mr. Kelley gave straightforward answers. He anticipated no difficulty with the union. As for the drivers-many of them had been raised from helpers with the understanding that they would be demoted in event of delivery curtailment or some similar emergency because of world conditions. The store was losing men from the helper staff because of the draft and war work so that in the initial stage drivers have become helpers again and none has been dropped.

During the discussion some traffic men expressed doubt about getting full public cooperation. Mr. Kelley allayed these fears by revealing that his store experimented last October with cutting down on returns, using the national defense plea. The result was a 48 per cent cut in calls for returns.

Mr. Brown of United Parcel hinted that one step in delivery curtailment might be elimination of deliveries in

(TURN TO PAGE 62, PLEASE)



# SUMMING UP

Fleet operator tells how he salvages parts by metal spraying & welding, resulting in lower costs & longer wear

by WILLIAM J. CUMMING\*

Automotive Engineer, Surface Transportation Corp., N. Y. C.

W. J. Cumming

UNDER existing conditions, it is quite important to consider what salvage methods can provide the greatest benefit to automotive maintenance. The

answer is probably metal coating and hard surfacing, for both methods not only allow the original dimensions to be restored economically, but furnish an added dividend, in many cases, by providing superior wearing qualities in the substitute metal.

#### METAL COATING

In 1932, the writer, faced with a famine such as we now face, but brought about by obsolescence rather than national defense, was forced to thoroughly investigate this excellent salvage process. It was found to possess many possibilities in the automotive field, mainly for the purpose of replacing mechanical wear.

The process was first thought impracticable, because there was no fusing action between the coating materials and the base material. However. it was proved later, if each problem in metal coating received careful study and certain rules were followed. excellent results might be expected. It is important in automotive practice to be positive that sprayed parts will not be excessively stressed, and that no fatigue cracks exist in the foundation piece before spraying. Further, the preparation of the foundation piece should assure keying and dovetailing deep enough to withstand the mechanical pressures involved. Also, the base material must be clean and free of oxides, oil, dirt and water. and the sprayed metal must be finely atomized, to insure the molten particles being small enough to penetrate the finest openings in the prepared foundation and eliminate the possibility of bridging the keys.

The anchorage for metal coatings may be prepared by blasting with sand, or steel grit, or by special knurling or grooving tools, depending on the later functions of the foundation piece, or the metal in the base, or the material being sprayed.

The structure of sprayed metal is built up as small molten particles blown from a gun strike the prepared base. flatten out and are instantly cooled. Thus, a stratified structure of small, flat, interlocking metal particles is formed. The heat generated by the spraying operation on the outside surface of shafts or rods has a considerable effect on the anchorage between the base and the coating materials. When the first layer of sprayed metal is applied it has a much higher temperature than the foundation. The second layer when applied has a higher temperature than the preceding layer until, as each successive layer cools and contracts, the entire coating is tightened on the base piece in the same manner as a sleeve is shrunk on a shaft.

Unless special preparation and spraying technique are provided when coatings are applied to inside diameters this same action tends to weaken the bond between base and sprayed materials. When metals are sprayed on flat surfaces special attention must be given the preparation of the edges of the base, the thickness of each layer applied, and the selection of spraying materials with definite ductile tendencies. It may in some cases be necessary to spray a ductile material first and bond the desired material to it.

In preparing the outside diameters of shafts, rods, and worn bearing areas, it is usually necessary to under-

<sup>\*</sup>Presented at the annual meeting of the Society of Automotive Engineers, Detroit, Jan. 13, 1942.

### SALVAGE

cut the surface to provide a smooth area for the keying or dovetailing operations, and to insure a finished coating of uniform thickness and strength. The four steps in coating a shaft are:

1. Undercut by turning or grinding.

2. Prepare the undercut surface by blasting or machining.

3. Coat the area with the material selected.

4. Finish the coated area by turning or grinding.

#### **Spraying Technique**

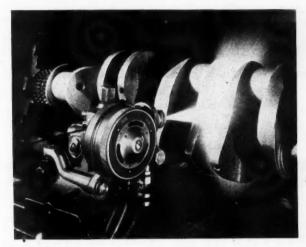
There are a few simple rules in metal spraying technique that should be followed to assure proper results. When shafts or similar units are ready for coating they are mounted in a lathe or other rotating device, on centers, with the spray nozzle of the gun about 6 in. from the surface of the work. For base pieces 2 in. or less in diameter the rotating or surface speed should be set at approximately 35 ft. per minute, and gun speed or passing speed should not be more than 1/8 in. per rotation. For larger pieces a surface speed of 50 ft. per minute, and a carriage speed of 1/6 of an in. per revolution are satisfactory. If lighter coats are desired both surface speeds and carriage speeds are increased proportionately.

Speeds for inside diameters will be about 75 ft. per minute for surface, and 1/6 of an in. per revolution for the transverse movement.

Most flat surfaces are sprayed by hand and, while some skill is required of the operator, he soon learns to time his passes according to the materials he is spraying. On large surfaces he will apply the materials at a rate designed to lay on a fixed amount of material per square foot.

(TURN TO PAGE 69 PLEASE)





Above are shown two methods of salvaging worn parts. Top: Welding a transmission housing. Above: Restoring a crankshaft by metal spraying

Below are shown three steps in metal spraying compressor crankshaft throws. Left, ground blasted; center, sprayed; right, finish ground











Top: Water pump shaft undercut and rough threaded. Above: The shaft is grit blasted and ready for spraying





Top: Showing the pump shaft metalized with stainless steel. Above: Shaft finish ground, ready for use

Application for Auditologistic to Parallele Shor Time and Tokes  Application for Auditologistic to Parallele Shor Time and Tokes  Application for Auditologistic to Parallele Shor Time and Tokes  An agency of the Short of Short of the Short of Short of the Short of the Short of Short of the	18. International regarding displaying disastinations of the which which falls. Chamelination perspection (a) the neutronic has in quiting measurement within which will be compared to the superior of the compared to the superior of the su	CERTIFICATION OF SOURCESS.  CONTROL
---	--	---

This is a reproduction of the tire ration form that must be filled out and certified by vehicle owners seeking tires

# RUBBER RATION INTERPRETATIONS

Tire rationing plan puzzles some vehicle owners who request clarification of their status & rulings on special cases



ETERMINED to meet drastic events with drastic action, the Federal Government relaxed its total ban on new tires, tubes and casing sales by imposing a strict rationing plan which has been functioning since Jan. 5. Rationing boards have been set up and applica-

tion forms printed and now eligible vehicle owners must fill out these forms before their qualifications for a tire are considered. (The tire application form is reproduced on this page. The Eligibility Classification was published on page 22 of the January issue.)

Contrary to expectations, there was no stampede by qualified vehicle owners to claim the precious rubber. This probably was due to the fact that those who could qualify belonged to that group whose business was essential transportation and who anticipated conditions well in advance.

Having safe-guarded their immediate future with ample tire stocks, eligible fleetmen now know that what they have must last until each vehicle is down to its last spare. Even then no tires will be forthcoming until one of the tires on a vehicle is down to its last mile of rubber and beyond saving with a recap. And then the old carcass must be exchanged for the new tire.

Such stringent rulings were bound to provoke a number of unexpected situations. What, for instance, is a qualified operator supposed to do, as in the case of the New York City trucker who was qualified for a tire but couldn't get it because he had no discard to turn in, as specified by law? What does a fleetman do if his old tire is lost, stolen or destroyed by some means beyond his control?

To complicate matters further, and despite the strict rules, Federal agents are reported to be investigating evasion of tire regulations by vehicle owners and inspectors and price pyramiding by dealers. Healthy tires have been certified as unfit, dealers are suspected of failure to report complete stocks and vehicle owners are alleged to be making illegal purchases

(TURN TO PAGE 78 PLEASE)

## Stud Remover By Alex Morton and Wm. Kramer New York

When a stud breaks off it is easy to arc weld a nut to it and remove it with a wrench. Take a nut whose inside diameter is slightly larger than the diameter of the stud and build up metal to the point that the nut is welded to the broken stud. This can be done at the rate of 20 per hour where it frequently takes an hour to drill out one broken stud.

#### 2

## Pulley Holder By Sgt. James Horner Co. C 53rd Regiment Holabird QM Depot Baltimore, Md.

If you have trouble loosening the nut on a generator that holds the pulley to the armature, you can take an old fan belt and fasten it to a piece of metal stock with a couple of U bolts so that it looks like a whip. When you want to loosen a nut wrap the belt around the pulley and hold on to the piece of stock and turn the nut loose with the other hand.

#### 3

#### Wire Connector Pliers By Gordon Upperman

By Gordon Upperman Continental Baking Co. Wheeling, West Va.

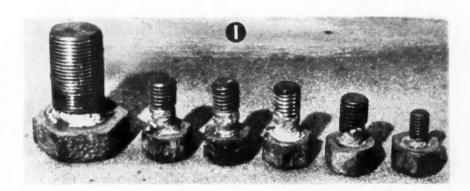
Due to the location of headlamp wires in some of the new model trucks, a diving act is necessary to make the connections. The pair of pliers illustrated will help in making this connection. It can be made by hand but due to the inaccessible location these pliers make it faster and easier.

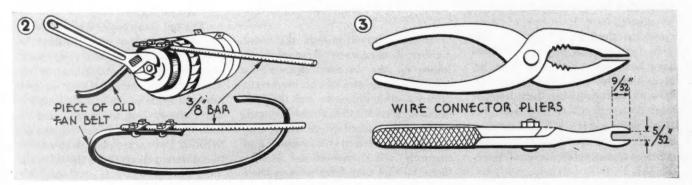
## SHOP HINTS

#### FROM FLEET SHOPS



Now is the time for all good citizens to come to the aid of their country by buying United States defense stamps and bonds, and here is a chance to get some easy money to invest in our Democracy. If you have an idea that simplifies shop operation, send this idea in to the editor. Commercial Car Journal will pay \$5 for each Shop Hint accepted. Send as many as you have with a photo or rough sketch for each. Explain the idea in your own words. CCJ will fix up drawing and text for publication.





# '42 RETREAD REVIEW

Indications are that of three recognized renewing methods only recapping will be done to conserve rubber stock



After the worn tire is buffed, camelbacked is applied in the retread process



ITH the present shortage of tires caused by the war, every sound tire carcass must be retreaded before its useful life can be considered finished. Before Pearl Harbor retreading was one of those things that fleets could either take or let alone. Now it is one of those things that fleets must take . . . or else.

By far the great majority of fleets have been using retreaded tires because they have proved economical. Now all fleets must use them because some fleets will not get any new tires at all while others will not get any new tires until they have proved that the tires to be replaced cannot be retreaded.

#### Three Types of Retreading

There are three types of tire reconditioning that fall under the general head of retreading available to fleets. They are the retread, the full recap. Each of these processes has its advantages and comparative disadvantages.

In the retread process the tread rubber is completely removed right down to the breaker strips. This means that the tire can be used right down to the last mile and then retreaded provided the carcass is sound. Stripping the tread means that a very complete inspection can be made and there is little chance of any foreign material that may have worked itself

into the tire carcass escaping detection.

With the retreading process it is possible to recondition a tire that shows some separation between the tread and carcass because by removing the tread the condition is eliminated. An additional advantage of the retread is that it makes a better-looking job.

On the less advantageous side there is the fact that this process is more expensive than the other two methods of renewing tires. Since a tire will usually stand only one retread there is an incentive to get the very last mile from the original tread and then get the very last mile from the renewed tread. This practice may lead to a high number of road failures and a relatively low number of new tires that reach the retreader in condition for retreading.

The full recap looks very much like the retread when it is finished because it is done in the same mold. Actually, the camelback that is vulcanized to the carcass is not so wide and not quite as thick as that used in the retread. Instead of removing the the old tread for this process the old tread is just rasped enough to remove tread design down to the shoulder and then the camelback is applied.



The tire is then checked for level and balance. Small disc at right shows out-of-balance spot needing rubber



The tire now goes into the curing mold to be vulcanized with a tread as deep as the one originally on the tire

As a rule a tire will stand only one full recap and if there is any separation between tread and carcass it cannot be done at all. There is also the possibility that some foreign matter is still in the tire to plague the operator when he tries to use the tire.

The recap seems to be the most popular process with fleetmen. In recapping a new strip of tread rubber is laid over the top of the tire, after buffing and roughening, and vulcanized to it. It is the cheapest process because it requires less material and labor. No heat is applied to the tire sides and there is no disturbance of the breaker strips. As soon as the original tread pattern disappears the tire can be recapped, although many fleets leave tires on for some miles after this time. There is on record cases where tires have been recapped as many as eight times.

A tire showing tread separation should not be recapped but since the recapping is usually done without trying to get the last mile from the original tire this seldom happens. A recapped tire does not look as good as one that has been renewed with either of the other processes but then fleets have found that they can get along without the extreme niceness of appearance.

Probably every fleet operator who has used retreaded tires has a favorite process which he thinks is better than the others. After trying to evaluate the process from a collection of information at hand it seems that it would be fair to say that the retreader is more important than the process he uses. There seems to be retreaders of all grades of ability and honesty.

Several well informed tire technicians who have had a great deal to do with government restrictions and the officials who make them would have us believe that the fleet operator will shortly be relieved of the responsibility of deciding between methods of tire reconditioning. The feeling is that shortly only recapping will be permitted. The reason is that recapping requires less rubber than the other methods and every possible means of conserving rubber is being used.

For greatest economy tires should be removed for recapping when there is between 1/16 in. and ½ in. of tread rubber left over the breaker strips. This means that the tire has given between 75 per cent and 80 per cent of its normal life. If removed at this time there will be a solid foundation for application of the tread rubber which will afford the greatest

protection to the tire fabric by providing a sufficient layer of tread rubber to protect it from dirt and water. It also provides enough stock for buffing without disturbing the breaker in the preparation for recapping.

Generally speaking, reconditioned tires will give between 50 and 80 per cent of new tire mileage. Now and then a case comes to attention where retreads give better mileage than new tires. There are many variables in tire testing and most tire men suspect that when a retread record looks too good there is something about the conditions of operation that has led the tester astray. For instance the difference in wear rate between winter and summer may be as great as 50 per cent. The position of the tire on a truck has a great deal to do with its mileage, the difference between a drive wheel and a front wheel sometimes being as great as 50 per cent. However, if the replaced tread provides a good flat surface and the original tread was highly crowned, it is possible for the retread to give better mileage than the original.

Every fleet operator who has used retreaded tires has found that the retreaded tires will not take hard usage like the new ones. Most operators keep retreaded tires off the inside dual

### **'42 RETREAD REVIEW**

(CONTINUED FROM PAGE 27)

wheel and many will not permit them to be used on drive wheels at all. In high speed operations most operators have not used them on front wheels. Some operators have used retreads only in the winter months.

All steps such as these have worked to advantage. However it may not be possible to follow such precautions when there are not enough new tires to go around.

The mileage figures given in the table on this page are the experience with tires selected at random from one fleet. This fleet did not take any precautions in the use of reconditioned tires other than the normal good care given all tires. The reconditioned tires were used in various positions and treated as any other tire.

After giving you figures that represent experience with reconditioned tires in peace time we feel honor bound to tell you that about all you can do with them is throw them in the ashcan. There will be no point in comparing results obtained with the very best camelback or capping stock that manufacturers were able to turn out with results that you are going to obtain with the camelback or capping stock that will be produced from now on.

Camelback or capping stock from now on will contain a certain portion of reclaimed rubber. There will be two grades of it for truck tires, both inferior to the camelback you have been getting on your tires. Stock for passenger cars will come all in one grade and it will not be as good as either grade of truck material.

Tire experts believe that it is a little late for fleets to think of retreading their own tires. They point out that fleets would have their troubles, to put it mildly, obtaining the equipment to retread or recap tires and after they had it they might find that there was no one who had enough camelback or recap stock to sell them.

On the subject of synthetic rubber tires, the experts have little to say. They followed our question on the availability of synthetic rubber with a question of their own which was, in effect, "Don't you read the papers?". What they were driving at is that the production of synthetic rubber to this year has been at the rate of about 10,000 tons per year while consumption of rubber has been around 640,000 tons. Obviously there is not enough of the synthetic to make a dent.

The government has appropriated \$400,000,000 with which to build and equip synthetic rubber plants. It is planned to have these plants in operation in 18 months. Whether or not the government can build plants and get them into operation in 18 months is anybody's guess. However, from previously gathered information we can tell you that synthetic tires, if and when you get them, should be about as good as any tires you ever bought.

Fleets need not worry about truck (Turn to Page 60, Please)

HE demand for high octane gasoline is greater today than ever before in order to keep our aircraft and those of our allies active, and as the tempo of action increases this demand will continue to rise. Tetra-ethyl lead is the common means of securing fuel of high octane value. Due to increased demands for the virgin metal, various refiners now find themselves with a restricted amount of tetra-ethyl lead with which to treat their gasoline. This may result in a lowering of the octane number for a standard grade of gasoline from 74 to 68-70 ASTM method.

The trend in engine design in the past has been toward higher compression ratios, requiring higher octane fuels in order to secure more economical operation. This means that bus and truck operators today are confronted with the question, "What effect will a lower octane fuel have on the economy and schedule of our operations?" and, "What changes are we going to have to make in order to be able to secure maximum efficiency from our present equipment with lowest maintenance cost?" There are perhaps several approaches to the problem but we believe the answers to the following four questions will serve the operators' best interests.

- 1. Are we going to have to lower the compression ration of our equipment?
- 2. Will our present distributor calibration hold good if we do or do not change our compression ratios?
- 3. Will we have to recalibrate our carburetors?
- 4. With the optimum changes we can effect, what will be the result on the power (or scheduled speed) and economy?

A series of tests, both road and dynamometer, have been run with two fuels on a 362 cu. in. White engine as used in our WA-26 model and the g.v.w. was established at 40,000 lb. since this load is quite representative of law requirements. Fuels of 69.5 and 74.5 octane number re-

#### COMPARISON OF NEW VS. RECONDITIONED TIRE MILEAGES

Tire Size	Original Miles	Miles After Recondi- tioning	Total Miles	Miles First Recondi- tioning	Miles Second Recondi- tioning	Miles Third Recondi- tioning	Year Service Start	Period End
32x 6	34,204	34,422	68,626	34,422		*****	7/1934	12/1938
32x 6	38,575	42,136	80,711	25,801	16,335		10/1935	8/1937
32x 6	27,086	29,869	56,955	29,869		*****	2/1937	12/1938
32x 6	22,370	24,343	46,713	24,343	*****		9/1936	12/1938
9.75x20	23,028	36,106	59,134	18,417	16,689	*1000	7/1938	12/1941
10.50x20	26,330	27,570	53,900	27,570	*****		1/1936	3/1940
10.50x22	49,802	54,813	104,615	23,109	31,704		8/1936	1/1941
10.50x22	48,285	40,043	88,328	40,043	*****		4/1934	7/1937
10.50x22	40,002	36,091	76,093	36,091	******		4/1934	12/1936
10.50x22	71,332	51,915	123,247	51,915	*****		4/1934	11/1938
Totals: Average	381,014	377,308	758,322	311,580	64,728 -	1000		
Mileage:	38,101	37,731	75,832	31,159	21,576		* Still i	n service.



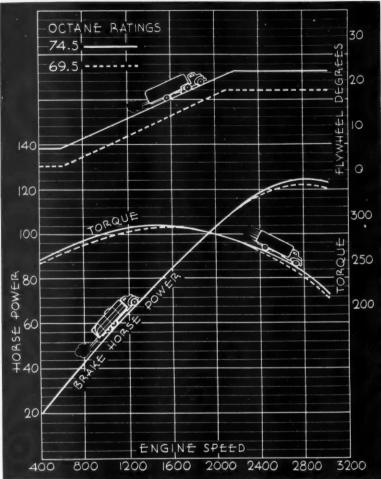


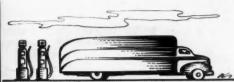
Chart shows full load comparison of 74.5 vs. 69.5 octane gasoline with 6.21 compression ratio in a 362 cu. in. White engine

# LOW OCTANE TRUCK TESTS

Engineering check gages operating effects that may result from use of fuels of lower octane rating

by R. L. WEIDER\*

Experimental Engineer, White Motor Co., Cleveland \*Presented at annual SAE meeting in Detroit, Jan. 12, 1942



spectively were used in these tests.

The road test program consisted of running gasoline economies at fixed throttle on a level road and varying throttles as necessitated by the terrain over a 28-mile closed circuit course. The fuel consumption in the latter case was measured by weight. The data checked within 300 total engine revolutions for each run. Check runs were within 10 seconds of each other for the total distance. The tests were controlled and can be duplicated.

Comparison tests were made on the dynamometer using both fuels with two compression ratios-the standard 6.28 to 1 and an optional 5.7 to 1. The standard distributor was run with fixed setting and then the spark was set at each speed in both cases to determine if a new distributor calibration was needed. The carburetor was also calibrated for both compression ratios in order to see if a new carburetor setting was to be desired. It should be stated that we used for road and load purposes curves based on actual vehicle requirements as determined from the road and dynamometer. Therefor, we always worked to the same roadload horsepower depending on the actual horsepower requirements of the various models.

From the results we would draw the following conclusions:

- 1. If an operator has a schedule utilizing not over 2400 r.p.m. as a governor setting, he can simply retard his distributor, keeping the compression ratio the same, but he will lose eight per cent in economy by going to the lower octane fuel.
- 2. If an operator has a schedule utilizing 3000 r.p.m. as a governor setting and he simply retards his spark he will lose five per cent in economy.
- 3. With the high speed schedule, if he wants to modify his distributor he can obtain better top end power.
- 4. With either schedule, if he wants to enrich his carburetor he can pro(Turn to Page 82, Please)



### **TRANSMISSIONS**

Authorities discuss possibility of a fluid and gear drive displacing wobble-stick transmissions after the war

[Editor's Note—In the midst of War and all the all-out effort to attain Victory, the purpose of this department will be to keep an eye on the future and to play a pin-point of light on the mechanical and technical progress that is certain to be one of the War's benefits, paradoxical as it may seem to associate good with devastating evil. In "Eyeing the Future" viewpoints will not always converge. When a subject is

it now and the wobble-stick transmission shifted by the driver will disappear from all types of automotive vehicles, including heavy-duty trucks, soon after the emergency is over and manufacturers can settle down and devote the normal amount of time to commercial manufacturing. The clutch will be replaced by a fluid drive and the wobble-stick transmission will be succeeded by an automatic device, probably a combination of hydraulic torque converter and gear drive.

This is the prediction of one group of transmission engineers and is based on the military impetus given to the program of taking the declutching and shifting operations away from the driver. controversial an attempt will be made to represent diverging points of view. First and foremost, let it be understood that this department will not reflect editorial opinion. It will simply report the opinions of automotive engineers qualified to form and express authoritative views. This department will appear irregularly, depending solely upon the ability to procure expert views on the variety of subjects deserving exploration.]

This program was well under way before military design began to be a force in the automotive industry. Automatic devices were beginning to make headway in the passenger car field purely for the convenience of the driver, and in bus design because drivers in metropolitan areas were finding it impossible to shift gears and at the same time perform all the other duties expected of a bus driver. Then along came the military tank program in which it is practically imperative that shifting be done automatically. The authorities want the tank shifting done according to plan, not according to drivers of various degrees of training whose judgment at any time may or may not be

(TURN TO PAGE 140, PLEASE)

INTER was just beginning to tune up for a full performance in Toledo when we stepped into the garage of the Ohio Cloverleaf Dairy Co. It felt good to get out of the whipping, biting wind that had suddenly sprung up, but it was much more pleasant a few steps later when we pushed a sliding door and stepped into the two-truck repair shop that was warm and clean. There was a radio playing softly which made the shop seem like a nice place to be.

Laid out on the floor before the superintendent's desk was a bunch of silver-colored radiator covers. W. S. Duncan, the fleet superintendent, was sorting them out for installation which was even then going on. Stepping through the cover design we found Mr. Duncan willing to talk about fleet maintenance and it did not take long to find out that he knew what he was talking about.

One of our first questions was about the radio and he said that he had read that the installation of radios in some barns had made the cows more contented, and he could do no less for his mechanical crews.

All told, Mr. Duncan has 80 trucks to maintain. Two of them are country hauling trucks used for bringing milk and cream into the dairy in cans, 10 are refrigerated trucks, 16 are used on wholesale routes and the rest are used on retail routes. Fifteen of the 80 trucks are stored at the ice cream plant on the other side of Toledo and 15 more are in Monroe, Mich., 20 miles away. All the rest are stored in the garage which houses the shop. The ice cream trucks are brought to the main garage every 1000 miles for lubrication and inspection and washing. The Monroe trucks are inspected and lubricated in Toledo but washed in Monroe.

To maintain these 80 trucks Mr. Duncan has four men on his mechanical force. One of them reports at 8 A. M. and works until 4:30 P. M. Another starts at 10 A. M. and quits at 6:30. These two men do the repair work on trucks that have been pulled out of service and take care of work indicated by the drivers' reports, which start filtering in shortly after noon.

Two men report at 2 P. M. and work until 10:30 P. M. One of them



W. S. Duncan, fleet superintendent (inset), uses portable maintenance

# CLOVERLEAF BY-PASSES BREAKDOWNS

Ohio dairy fleet of 80 trucks flavors its methodical maintenance with common sense to give road failures the slip

#### by HENRY JENNINGS

Technical Editor, Commercial Car Journal

occupies all of his time inspecting trucks on a very strict preventive maintenance routine. The other man checks gas, oil and water on all incoming trucks and manages to do about half as much inspection work as the man who puts in full time.

From 10:30 P. M. until midnight there is a dead spot so far as maintenance is concerned but there are no trucks out at that time. At midnight a washer reports and works until 8:30 A. M. If there is a breakdown during the morning hours, the

washer is instructed to call a wrecking company that has been trained to stop by the garage, pick up the extra truck and then tow the brokendown truck back to the garage. However, as a result of careful preventive maintenance, this so seldom happens that it is largely a matter of instruction rather than of practice.

The work week of this crew is five days and the days off are staggered so there are two men off as little of the time as possible.

Drivers carry no very heavy burden of responsibility so far as maintenance is concerned. They turn in reports of mechanical shortcomings when necessary but the man who gasses and oils trucks is also capable of inspecting trucks and he is available for consultation on what the report should say. For that matter, it would be a pretty shy driver who would hesitate to talk over any trouble with Mr. Duncan before making a record of it. Drivers do not change tires.

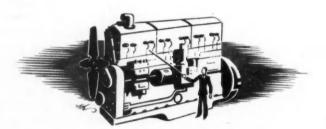
Mr. Duncan sticks very closely to the General Motors preventive maintenance routine. He has varied it a little but he says that the changes he has made in it are so minor that they did not seem worth writing down and off hand he did not recall what they were. He does not worry about supervising the inspection work done at night when he is not there. The mechanics simply take the truck from the list showing which trucks are approaching inspection mileage and goes to work on it. When they get done they are responsible for entering the work done on the permanent record and their initials go with the shaded block on the preventive maintenance form that shows the work done. Mr. Duncan feels that the service record of the trucks is all the supervision that the inspection work needs and that if it is not done right it will very soon show up. The inspections are the same for every 1000 miles until multiples of 5000 or 15,000 miles are reached and then a more thorough inspection is performed. Three trucks are inspected once a month because mileage is so

The inspection work is done in the shop if the truck happens to be there for another reason but otherwise it

# DIESEL OPERATION & MAINTENANCE

A fleet operator with 75 million miles of diesel experience talks frankly and tells . . .

- 1. What problems are encountered in winter
- 2. Why drivers should be specially trained
- 3. Why diesels must be driven by tachometer
- 4. Why it's harmful to run against governor
- 5. How diesels should be started when cold
- 6. How to cut failures and get performance
- 7. What are the principal remaining problems



by J. L. S. SNEAD, Jr.\*

Maintenance Engineer, Consolidated Freightways, Inc.

\*Presented at the annual meeting of the S.A.E., Detroit, Jan. 14, 1942



J. L. S. Snead, Jr.

TRAINED, experienced drivers and mechanics are required for satisfactory operation and maintenance of diesel engines in intercity truck service,

The best driver cannot satisfactorily operate a diesel engine unless it is properly maintained. The best mechanic cannot satisfactorily maintain diesel engine without excessive cost and road failures unless it is properly driven.

Our operations extend from Chicago and Duluth to San Francisco, Portland and Seattle. Elevation varies from sea level to 7100 feet including regular daily operation over many mountain passes throughout the year. Temperatures in this territory normally vary from 40 deg. below to 110 deg. above zero.

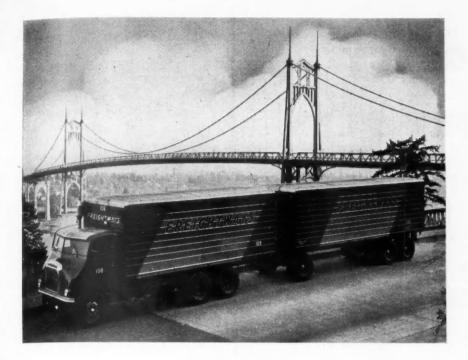
We have been operating diesel-powered trucks for nearly nine years. During that period we have accumulated over 75,000,000 miles of experience with them. A number of individual engines have been in operation over 800,000 miles. Most of our diesel engines are in six-wheel-truck-six-wheel-full-trailer combinations pulling gross loads of 68,000 to 76,000 lb.

As a result of this experience and of the operating conditions in the territory we serve, many operating and maintenance practices have been adopted to meet specific problems. One of the most serious of these is the problem of low temperatures. Fuel, starting, crankcase temperatures and mineral deposits in the cooling system are the chief cold weather problems affecting the engine.

#### **Diesel Winter Problems**

In certain areas winter fuel must have a pour point of at least —20 deg. There must not be water in the fuel. Our storage tanks are checked for it with hand pumps once each week in the winter.

The truck tank is insulated with half-inch insulation protected by a waterproofed canvas cover laced over the entire tank assembly. A 1½-in. flexible line carries a part of the exhaust through a steel tube welded



in place and running full length of the 16-in. round tank about 2 in. from the bottom.

The engine is idled at 1200 when parked for loading, unloading or a meal stop. In extreme weather the lines will freeze up after a short period of such idling. They will also freeze up at times when traveling with a light load and a tail wind, especially if the wind strikes the fuel tank.

If the fuel line freezes up it must usually be removed by the driver, thawed out with a blow torch or by holding it down the exhaust stack of another truck; cleaned by the driver blowing on one end to force the solidified fuel out the other, and replaced. There is no time to lose as we do not use anti-freeze.

Starting is one of the most difficult of cold weather problems. In order to bring down the temperature at which it is possible to start the engine we sacrifice battery life for high output for a short period. We use 000 battery cable and two ground straps in order to obtain adequate capacity. We ground the starter rather than run a hot wire to it in order to eliminate the leakage through the fields which often causes the batteries to run down. We have reworked the starter into what amounts to two 12-volt starters in one housing. By these methods we have nearly tripled the starting speed over the standard installation at the same temperature. Of course this greatly reduces the temperature at which it is possible to start the engine.

The unsupercharged engine will almost invariably start if you can spin it once. If it will turn slowly you can usually start it by putting a small quantity of gasoline down the intake or by turning a blow torch down the intake. In order to make this possible and in order to remove restrictions we have made and used separate intake manifolds for each pair of cylinders for a number of years.

The supercharged engine however, presents an entirely different problem. Its compression ratio is not high enough to start in really cold weather even though it is possible to spin the engine. This problem is so serious that we have even considered the possibility of using standard pistons and camshaft to increase the compression ratio in the engine enough to make it possible to start more easily. In order to start the supercharged engine it is necessary to stuff rags in the exhaust stack because of the valve overlap and to turn a blow torch in the intake. The blow torch cannot be used between the blower and the intake port because of the pressure in the manifold. We have given serious consideration to the possibility of putting small quantities of gasoline in the intake manifold as a starting aid. When the engine does start it must be idled until it is fairly warm. If the driver tries to speed the engine when it has just started the cold air will kill it as soon as the speed begins to increase.

Starting is much easier if the hand priming pump is used. In a terminal where facilities are available, the engine can be started very easily by filling the crankcase with heated oil or by using a heat gun to put warm air in the intake. Of course we keep the equipment in heated buildings wherever it is possible to do so but unfortunately that is only possible at a few points. When the equipment must stand out all day it is idled at 1200 r.p.m. to avoid excessive cylinder wear.

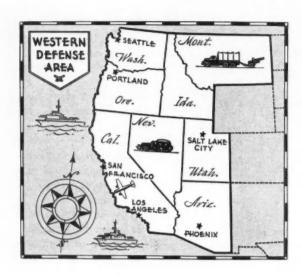
We have encountered considerable difficulty with engine deposits when crankcase temperatures go below 140 deg. In order to keep them above that point during the winter months it is necessary to put a metal shield from the bottom of the radiator to the transmission between the frame side rails so that the crankcase is completely protected from the wind. It is usually necessary to cover a considerable portion of the radiator core as well.

Because of the fact that we do not use anti-freeze it is necessary to drain radiators frequently during the winter months. These frequent water changes greatly increase the mineral deposits precipitated in the engine. This has resulted in an unusual situation. Burning out sleeve rubbers is a much more serious problem during the winter months than during the summer months. Since the radiator is almost invariably full of water when these failures occur we feel that improper dissipation due to mineral deposits on the sleeve is responsible for the heat concentrations which burn out the sleeve rubbers. This winter we are using a capsule water treatment in order to prevent these deposits. The driver places one capsule in the radiator each time he fills it after it has been drained.

#### **Diesel Operation**

Our drivers are very carefully selected and trained. We do not permit any man to drive a diesel-powered

# EMERGENCY TRANSPORT PLAN



[Editor's Note—This emergency truck transportation plan was devised by the Central Motor Transportation Committee at the request of the Commanding General of the Western Defense Command and Fourth Army. The plan is intended to cover the handling of both

WAR EMERGENCY HIGHWAY TRANSPORT PLAN

Applicable in the Eight Western States Included in the Western Defense Command

1. This plan is applicable in the area outlined above (Washington, Oregon, California, Utah, Arizona, Idaho, Montana, Nevada) and is intended to apply to all transportation of property, and related services for the military and naval departments of the United States by motor vehicles and equipment, other than that performed by vehicles and equipment of the Federal Government, and contemplates that all such transportation and related services shall be arranged for through the dispatching offices hereinafter provided for.

2. Dispatching offices shall be established at Seattle, Wash.; Portland, Ore.; San Francisco and Los Angeles, Calif.; Salt Lake City, Utah; Phoenix, Ariz., and at such other places as shall from time to time be determined by the coordinator. Each

military and civilian highway transportation requirements in the command area, which embraces eight western states. The plan is presented here in full because it is expected to serve as the model for other sections when conditions make it necessary.]

such dispatching office shall be in charge of a manager who shall be responsible for the proper conduct of the business and personnel of the office. The manager shall be selected by the coordinator, subject to the approval of the executive committee as provided for in paragraph eight, from a list of nominees submitted by the carriers and private operators in the area. The manager shall report to and be subject to the direct supervision and continuing authority of the appropriate executive committee provided for in paragraph eight. Such supervision and authority shall accord with the directions and policies of the coordinator. The managers and executive committees in any region established in connection with the Central Motor Transportation Committee shall be subject to general supervision and authority of the Regional Transportation Committee for that region, such supervision and authority to be exercised in con-

(TURN TO PAGE 98, PLEASE)



W. Springhorn

IN c h a n g i n g from a 6-day to a 5-day delivery week there is obviously one-sixth less total time for selling and deliveries in a business such as

ours—laundry, dry cleaning, rug cleaning and fur storage. Therefore, an immediate loss of volume is a natural expectancy. Theoretically, this loss should be about 16 per cent, but we succeeded in holding the loss to between 5 per cent and 10 per cent during the change-over period—the loss varied according to the efficiency of the individual salesman and the nature of the route. In order to offset the loss, it was necessary for us to devote more time to selling.

With the change to the 5-day week, we instituted a policy of delivering and collecting on the same trip and set as our goal the ideal of 20 per cent a day. By that we mean just this: To keep our plant running evenly, efficiently and economically, we need an even flow of bundles in and out of the plant, and that makes it desirable to collect and deliver one-fifth of our week's volume each work day. From the plant standpoint, this is so beneficial that it would be a desirable policy even had the loss of, say, 5 per cent volume continued.

However, such a plan conflicted with two old habits—the idea that Monday is wash day and Tuesday is ironing day, and that garments for dry cleaning should go to the cleaner Wednesday or Thursday and be finished Saturday.

Therefore, in changing to a 5-day week, there is less loss that, in a sense, can never be made up. We offset it by getting new customers, but you cannot get as much volume from old customers for two reasons: Some of them just will not change their ways and some of those that continue with you are more likely to wash out a few things for themselves. That cannot be helped entirely, and is why plans for getting more customers are so important.

Our salesmen did an excellent job in getting old customers to cooperate and our volume at the start of the new plan did not drop as much



The larger body on a shorter wheelbase nearly doubled the capacity

## LAUNDRY SHRINKS 6-DAY WEEK TO 5

By stretching truck bodies to double capacity, shortening loading time and thus giving drivers more time to sell



#### by WESLEY SPRINGHORN

Secretary-Treasurer, Blue Point Laundry, Blue Point, N. Y.

as expected. The most effective argument proved to be the personal one that it would help the driver to get a day off a week if the customers would cooperate. It is more of a task than might appear at first thought. For instance, where a wholesale bakery salesman serves the same

customers each day, a laundry salesman sees a customer only twice a week—once to collect and once to deliver. Therefore, on the basis we now operate, while he has one territory, you might say that he has a number of routes in that territory, and he has to adjust himself to the

plan for 20 per cent volume each day on the one hand and the requirements of his individual customers on the other hand.

In a sense, a laundry salesman is in business for himself, and the master of his own time, but any change that lengthened five of his work days in order to have the sixth day off would not be sound. We sought to shorten his work week, and the result is that our salesmen now work from 5 to 10 hours less a week (again depending on the individual and the route), and yet they now devote more time to selling-in actual contact with customers and prospects -than they did on the old basis, which has enabled us to more than offset the volume loss due to the change to the shorter week.

I might explain that we get all of our business by motor trucks—that we have no drive-in depots, sub-stations or other cut price outlets. We seek business on quality and service—not on price. We are an "AP-PROVED" laundry, which means that we have the machinery, methods, and conform to standards necessary to rate this American Laundry Institute recognition.

We are located in a town of only 1,000 population, and our market, except for one route, is Suffolk County, New York, with a population of only 200,000 the year round, but considerably more in the vacation months. The towns are small and scattered, with farms and estates in between, and many laundries compete for the business.

We have built up a business of 14 routes and a better volume per route than city laundries average, according to published surveys. Five of our routes are nearby routes. doing 35 to 40 miles each per day. But for the bulk of our business we have to do considerable mileage—up to 130 miles a route per day.

The fact that about half of our poundage is wet wash is an indication that our market is not made up of the elite only. On the other hand we have developed a substantial volume of dry cleaning, rug cleaning and fur storage.

Of our 14 routes, eight are now double capacity routes in that we (TURN TO PAGE 102, PLEASE)

In planning maintenance for our fleet we had to consider that while we have two complete shops, one at Indianapolis, Ind., and another at Irvington, N. J., our trucks operate all over the country. Naturally we try to do as much of the maintenance work as possible in our shops, but what might be classed as emergency work must be done by outside shops when our trucks are too far away to make self maintenance feasible.

There are two rules that guide all of our thinking. We consider the reasons to be self-evident. One is that a truck cannot make any money for us while it is in the shop. For this reason, we have a unit replacement system which permits us to substitute a rebuilt unit and send the truck on its way. The other rule is that mechanics cannot maintain trucks without plenty of shop equipment. As a result we buy a great deal of shop equipment and make some more that we are unable to purchase.

Just how often a truck will get into one of our shops is a bit uncertain. It depends upon how long it has been since the truck was in one of the shops and upon the dispatcher's ability to make the truck work its way back to the shop or to a point close to the shop. With this uncertainty it is impossible to give the trucks an inspection based upon miles with the regularity that most fleets are able to attain. Consequently when a truck does get into the shop we give it a very thorough inspection with the thought in mind that it may be some time before we get another chance at this truck.

We have found from experience that a differential should give us about 100,000 miles without trouble. We feel we should get about the same mileage from transmissions and clutches. Upon the basis of this experience we replace differentials, clutches and transmissions on trucks that come into the shop at approximately these mileages. The units removed from the trucks are then rebuilt after the truck is on its way.

From brake lining we get about 100,000 miles on rear brake installations and 30,000 miles from lining on front wheels. These mileages depend, of course, upon keeping the brakes in adjustment during this period. From these figures and close

# MAYFLOWER MAINTENANCE



Unit replacement system enables two repair shops to keep national moving van fleet rolling with few failures

/

by JOHN S. SLOAN

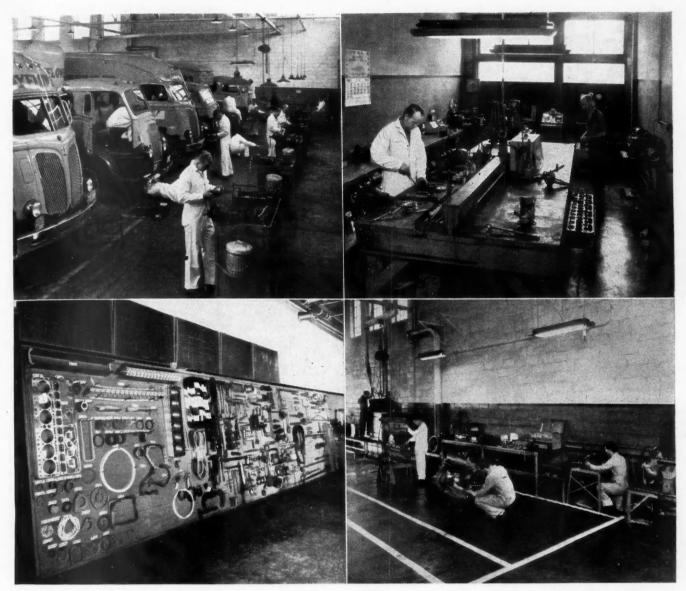
Vice-President, Aero Mayflower Transit Co., Indianapolis

examination of the lining we are able to estimate whether or not the lining should last until the truck next gets to the shop.

We have to watch engines more closely upon inspection since their performance life is not so uniform. For the most part we have determined that a valve job, either the original or one we have done in the shop, should last about 40,000 miles. Somewhere between 50,000 miles and 100,000 miles we know we will have to give the engine what we call an overhaul in the frame. This job

usually consists of replacing piston pins, piston rings and some bearings. We would be disappointed if the cylinders were not in condition to give more mileage and we certainly do not expect trouble from the crankshaft at this point.

At some point beyond 100,000 miles, the mileage being determined by internal inspection, we know that the engine will have to be completely overhauled. We approach the inspection with a full knowledge of how far the engine has been and what has been done to it. We keep complete



Top: Note the cleanliness of the repair section of the motor maintenance department. Each mechanic has his own bench, permitting rapid and uninterrupted work. Above: The tool and parts board holds tools within easy reach

Top: The electrical department is apart from the rest of the shop. Above: Another section of the maintenance shop showing degreasing machine in far left corner. All motors are cleaned before repair work is begun on them

accurate mileage records regardless of where the truck has been or how long it has been since we have seen it in the shop. In addition to he mileage record every bit of mechanical work that has been done either in our shops or on the outside has been recorded in detail in each shop file.

When we check an engine with a compression gage to analyze it for condition we may find that all cylinders are 10 lb. below manufacturer's specifications. This would not worry us too much if the mileage indicated

that the engine had about 25,000 miles to go until a normal overhaul period. We would be inclined to let it go provided the oil consumption was under 1 qt. per 100 miles. And in the case of oil consumption it is not the loss of the oil that worries us; it is what is going to happen mechanically if the oil consumption is too high.

However, if the compression test showed us that one cylinder was 10 lb. below the rest in pressure we would certainly do something about it. One weak cylinder would cause trouble before we got the engine back into the shop. Oil pressure is another indicator we watch closely. If it will not come up to specifications, something must be done.

Let's assume that the oil consumption is over 1 qt. per 100 miles, that we have compression pressures on one or more cylinders which are too low to ignore, and that the mileage records indicate it is about time to overhaul the engine. We yank the engine, replace it with another rebuilt engine and send the truck on its way after taking care of other units that



#### **MAYFLOWER MAINTENANCE**

may have needed attention. We still have an engine in useless condition and we have to get to work on it.

The first step is to clean it up so that we can see what we are doing and then disassemble it. To keep the parts from getting scattered all around the shop we have a bin on casters into which we put the cleaned parts. The big parts go into the box and smaller parts go into the trays along each side of the box. At one end of the box is a valve board to keep the valves in order.

In rebuilding the engine we leave most of the actual fitting of new parts to a specialist. Most of our engines have wet sleeves so we do little reboring although we have done some of it. New pistons and rings fit new sleeves, so little work is required there. The crankshaft is another matter. Probably it is more than .002 in. out of round and we do not want to start the engine out with a lot of new parts and a half worn out crankshaft so we install an exchange crankshaft .030 in. undersize.

Here you might feel that if we insert new undersize bearings in the connecting rods we can begin to buckle the engine up and be on our way but we have not found it that easy. We take the connecting rods and replace the caps without the bearing inserts and then we "mike" the saddles in three positions on each side of the rod. If the rod bores are more than .0015 in. out-of-round we discard the rod. We do not feel that a bearing insert would be round if it were installed in a connecting rod with an out-of-round bore. Perhaps we might be tempted to buy greater undersize bearing inserts and bore them round and to fit after installing them in the rod but we must remember that some outside mechanic may possibly do the next job on this engine and he would not know what to make of it without proper information.

When all of the connecting rods pass inspection we get the crankshaft up on the bench and install all connecting rods with bearings on the crankshaft. After tightening the manufacturer's specifications with a torque wrench we turn the connecting rods around making sure that they fit all the way around. We do not install them and tap them back and forth to see if we have clearance. We likewise "mike" the main bearing bores to see if they are round and have enough but not too much clearance.

We have some very definite ideas on valve reconditioning, too. We think we are right because while many fleets are complaining that the original job lasts longer than subsequent jobs we have not found this to be so. Our valve-job mileages measure right up to the original factory job.

In the first place we grind all valves to a slight interference angle. That is, if we grind the seat to a true 45 deg. we reface the valve to about 43½ deg. Without attempting any great discussion of the theory of this practice, we find that it gives us better results and that is what interests us. It may be said that grinding this way gives the advantages of a wide seat, that is more cooling of the valve, without the disadvantages of a wide seat, chief among which is pitting.

After our valve seats have been ground to suit us we pass on to the valve springs. We will not use a valve spring unless it meets manufacturer's specifications. This is a matter of a very few minutes to test if you have spring scale. It is a matter of many miles if you do not have the spring scale and are unable to test the springs.

If new guides are required to make our valve job right we install them but we never ream them. The guides (TURN TO PAGE 108, PLEASE)



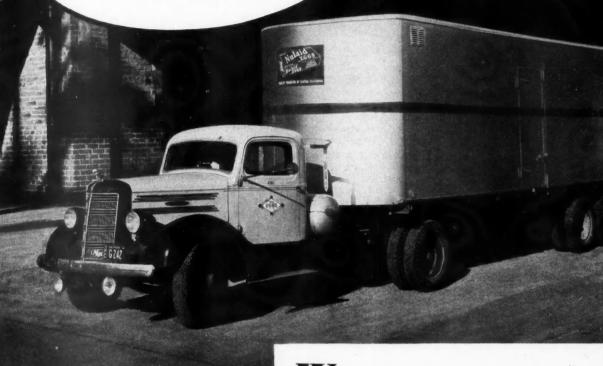




Top: Headlights are tested and adjusted with a machine which slides along a rail set in the shop floor. Center: Note the equipment in the blacksmith shop. Above: Showing a section of the parts department containing a complete stock of all vital parts which might be needed for the next 30-day maintenance period

"Uninterrupted service is a vital factor"

say Poultry Producers of Central California



Exide

HEAVY-DUTY

TRUCK BATTERIES



HEN perishables must move, they've got to move fast and without interruption. That calls for dependable starting power...the kind of power transport men know they can find in Exide Batteries.

Want concrete evidence? For five years the Poultry Producers of Central California have used Exide Heavy-Duty truck type batteries in their fleet of 140 cars and trucks. Mr. O. W. Hall, Superintendent of Transportation, gives unqualified praise to Exide's dependability and low cost per mile. Exide Batteries pass the test that counts the most...that's the test of the open road!

There's an Exide Battery for every size and type of motor vehicle. Exide will help keep America rolling.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

The World's Largest Manufacturers of Storage Batteries for Every Purpose Exide Batteries of Canada, Limited, Toronto

### SHOWCASE OF NEW PRODUCTS



#### K-D Blackout Lamp

A new blackout lamp suitable for bus and truck companies as well as for utility companies, police, fire and ambulance installation has been announced by The K-D Lamp Co., Cincinnati. The new lamp has



a bracket mounting which can be adapted to various locations and installations merely by bending the bracket. The chief feature of this new lamp is that the plastic lens and plastic color filter have dead black metal louvres in between, all on one com-

pact, one-piece assembly.

The lamp is available with blue plastic filter for front or side marking and red plastic filter for rear clearance or tail light installation. The body of the lamp is standard black finish. It operates on an economical 2 c.p. No. 55 Mazda bulb. Naturally, the black-out lamp does not project a beam or pattern of light as this would be visible from the air above. The function of this type of lamp is to serve as a warning to pedestrians or an approaching vehicle and is not intended to illuminate the way.

The K-D company has been manufacturing special black-out equipment for the Army and Marine Corps for some time. This new lamp is the first blackout lamp designed by K-D for civilian use.

#### **Upholstery Shampoo**

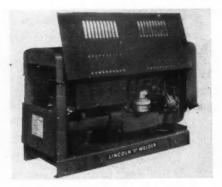
The Magnus Chemical Co., Inc., Garwood, N. J., has acquired and is now distributing the product known as "Dy-Kle-n," which is a combination dye and cleaner for seat upholstery. It is non-inflammable, odorless and is said not to injure fabrics.

#### **Engine-Driven Arc Welder**

A new engine-driven arc welder which is specially designed for job welding and garage work and which embodies a new system of engine-speed control for maximum fuel economy and minimum engine wear, is announced by The Lincoln Electric Co., Cleveland, Ohio.

Of 200-amp. size, this new unit is engineered for welding applications of all types and sizes. Of direct current type, it can weld effectively practically all metals and alloys with bare or shielded arc-type electrodes or with the carbon arc where desirable. Its compactness and light weight make it readily portable and hence suitable for work in remote locations as well as those applications which are readily accessible.

The machine's self-indicating voltage control and current control make it easy for the operator to select any type of arc and any arc intensity to suit the job. They provide continuous selection throughout This control directly varies the range. the speed of the engine from 1800 to 1400 for welding duty and thus gives very accurate control of the open circuit voltage. In addition, this control may be used to



bring the engine to an idling speed of around 900 r.p.m.

The generator is single-operator, variable-voltage type with laminated pole pieces, increasing arc stability and simplifying welding. The welder is powered by a Hercules industrial engine equipped with centrifugal - type governor, high - tension magneto with impulse starter coupling, and oil bath aircleaner. Net weight of the unit (stationary model) is 890 lb. Dimensions: 56 in. by 37 in. by 20 in.

#### Wheel Balancing Weights

The Harley C. Loney Co., Detroit, announces a new line of truck wheel balancing weights which will fit all types of truck wheels.

This balancing weight is adaptable to both static and dynamic wheel balancing on all sizes and types of truck wheels. In order for a wheel to be in proper dynamic balance, its weight must be distributed evenly throughout its entire mass.



necessitating the application of balancing weights to both sides of the wheel-an impossibility unless the weights are of different shapes or contours to fit all types of rings as well as rims.

The Loney company weights consist of seven different shapes or contours. Each design is made in a number of different weights, ranging from 4 oz. to as high as 20 oz.

#### Water Pump Seal



The features of this bellows - type seal are: seal has only 2 parts: bellows and spring. Bellows is of a synthetic rubber compound; installed partially a

compressed, ready for instant seal; entire unit (bellows and spring) is spring driven and operates as a driving coupling; seal does not touch or have a sliding contact with the shaft; rust, corrosion and deposit do not interfere with or reduce efficiency; bellows connects two flanged ends; spring is placed in a fixed position against the inside shoulders of the flanged ends and so holds the contact facings against the sealing washer on the one end and the driving base on the other. Among other advantages is "blind-fold" installation. Seal cannot be installed wrong either on the assembly line or in the field. Both ends are identical-either end is right. Crane Packing Co., 1800 Cuyler Ave., Chicago.

#### Liquid Starts Wet Motors

A new liquid preparation, said to be effective in starting wet motors instantly, and in keeping them protected against rain, snow, sleet, salt water and corrosion when it is applied to electrical parts and connections, is announced by the Cleaver Products Co., Olympia, Wash. Known as "No-Stalls," the liquid is brushed over spark plugs, distributor caps, high-tension cables and battery terminals. It prevents battery corrosion and eliminates noise and interference in automobile radios from high-tension wires and spark plugs.

#### [MORE PRODUCTS P. 42]



"Kunning light or rolling heavy," Federal Trucks match today's wartime economy needs for power, dependability and consistently lower operating costs.

That's because of Federal's experienced insistence on a more perfectly balanced truck design where motor, chassis frame, springs, running gear, axles and gear ratios are all correctly engineered and properly coordinated—one to the other. It is this close adherence to balanced design—without compromise to production needs or manufacturing restrictions—that has built Federal's reputation for a value beyond purchase price which pays out in extra performance.

Federal Trucks, in their wide range of capacities and models, are at work in every field of transportation throughout the world—serving the largest corporations, the smallest companies, big fleet owners and individual operators with equal distinction and unsurpassed economy... will do the same for YOU!

FEDERAL MOTOR TRUCK COMPANY, DETROIT, MICHIGAN

Federal's heavier duty trucks insure more consistent and continuous operating economy because of their "balanced" design.



Federal Trucks are built in both standard and C.O.E. units for tractor-trailer operation to meet varying load and road conditions.



Over half a million square feet of factory floor space are used to produce the famous line of Federal Trucks



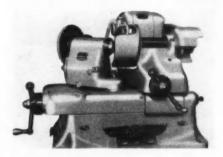
FEDERAL IS BUILDING MILLIONS OF DOLLARS OF TRUCKS FOR UNCLE SAM

# SHOWCASE OF NEW PRODUCTS

(CONTINUED FROM PAGE 40)

#### Valve Refacer

An improved model of the "Super-Service" valve refacer has been announced by the Black & Decker Mfg. Co. of Towson, Md. It is now offered with new improvements which increase its suitability to general shop work. A lower base improves visibility of work on the average height work bench. New wheel motor mounting is more accessible for lubrication and adjustment. The refacer can be supplied either as a dry-grinding or wet-grinding



unit. It obtains its features of power from two independent universal motors; highspeed feed screw that combines accuracy of screw feed with speed of lever feed; sensitive slides eliminate periodic gib adjustments and insure accuracy; ball-bearing spindle is extended, double-end type to permit stem grinding and other attachments without disturbing refacing set-up.

Available attachments for the new refacer include a micrometer valve stem grinding attachment (either wet or dry grinding), rocker arm and breaker point grinding attachments.

#### Machine Tool Cabinets

This unit offers machinist a handy work bench-cabinet which features security and all-around usefulness with heavy gage working surface, ideal for small vises and



grinders. Twelve square feet of enclosed storage area are protected by full swinging triple latch doors equipped with padlock hasp or built-in flat key lock. Center shelf is adjustable on 1½-in. centers. Finished in durable green baked enamel. Lyon Metal Products, Inc., Aurora, Ill.

#### Electric Hoist

A new, light-weight, compact wire rope electric hoist has been added to their present line by the Wright Mfg. Division of the American Chain & Cable Co., Inc. The "Speedway" hoist is obtainable in capacities from 250 up to 1000 lb. Portability, flexibility and accessibility are outstanding features of this hoist.

Features of "Speedway" construction are push button control, weather-proof, acid-proof, dust-proof, preformed hoisting cable on drum winding eliminating slack chain fouling loads, safety limit switches, and safety load blocks. Furnished for lug, hook or trolley suspension, it can be mounted parallel or crosswise to runway beam when used with trolley.

Available for 110- or 220-volt single phase 60 cycle current; also for 220- or 440-volt 3 phase 60 cycle.

#### Fibre Washer Assortment

Champ-Items No. 417 fiber washer assortment has just been added to this line of accessories. A general assortment of eight sizes of fiber washers used on carburetors, fuel pumps, generators, and



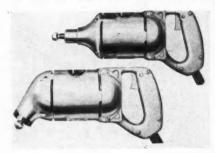
places where a gasket or insulating washers of fiber are required. Packed 300 washers to an assortment in compartment container with size chart in lid. Champ-Items, Inc., 6191 Maple Ave., St. Louis, Mo.

#### Tire Roughing Brush

The roughing of tire surfaces in preparation for retreading is facilitated by the Osborn brush recently placed on the market. The brush is constructed of strands of twisted wire and is so designed that matting, spreading or shedding is prevented, so the manufacturer claims. It is also claimed that the brush will not scorch the tire cords or leave burned spots when buffing. It is available in four, six and 10-in, diameters. Osborn Mfg. Co., Cleveland.

#### Valve Seat Grinders

Van Dorn Electric Tool Co., Towson, Md., is featuring two valve seat grinders. The "vibro-centric" grinder has been redesigned for more power and encased in streamlined housings featuring compact construction. The new 55-degree standard "vibro-centric" grinder brings to the standard line the angle head which has been



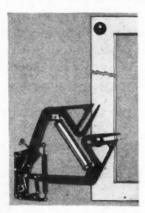
a feature of the heavy-duty grinders. This 55-degree grinder is especially handy when working under "alligator" hoods or other obstructions.

#### Dirt Solvent

A new mineral grease and dirt digestive solvent called Gunk X-11 is available in concentrated form from the Curran Corp., Malden, Mass. Diluted with a grease solvent, the cleaning method is carried out by cold immersion of greasy or dirty parts. Rectangular tanks of 300 gal. capacity are suitable for the solvent bath. It is claimed that trichlorethylene vapor degreasing tanks may be converted for use with this solvent digestive and emulsifying method.

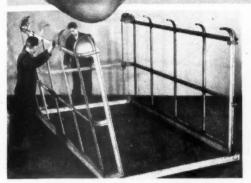
#### Door Operator

A new type Air-Lec door operator for sliding doors has been introduced by the Schoelkopf Mfg. Co., Madison, Wis. Called the "Inertia Model," the unit is designed on a new principle. The application of force is more direct. The action is started by compressed air from the cylinder. During the main part of travel the door rolls freely by its own momentum, at a controllable pre-determined speed and free from the operator. The main spring, regulated by the check-



ing action of the air cylinder, does the last part of opening or closing the door. The result is a quick start and a smooth stop, with less air used.

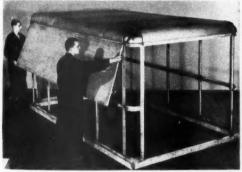
## "Build this Lighter, Stronger TRUCK BODY -in only 46½ Man-Hours"



1 Ls framing is assembled on floor, then raised into place. Simple wrenches are only tools necessary.



2 Roof sheets are then put into place. No cutting or fitting of any part is required.

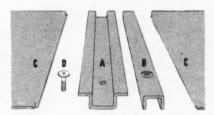


3 Side sheets are pulled into tension, providing a light and tremendously strong construction.

#### Lindsay Structure gets EXTRA Strength without Extra Weight

Lindsay Structure offers body builders and truck operators a fast, simple method for assembling lighter, stronger truck bodies.

This prefabricated construction requires no riveting or welding. It can be assembled by unskilled workers with simple wrenches. The panel sheets in Lindsay Structure are "pretensed" so that they instantly resist distortion and contribute their strength to the framing. Thus, it is possible to use 26-gauge metal and yet obtain a body stronger than conventional bodies. In case of an accident, the damaged parts can be re-



The basic elements of Lindsay Structure: A-flanged frame; B-tensioner; C-steel sheets with drawn edges; D-socket lock screw.

placed from the outside without disturbing undamaged sections.

Lindsay Structure is not expensive, because all parts are fabricated by mass production methods. Yet bodies can be built to any size, with square or round corners and straight or slant backs. Investigate Lindsay Structure today.

There is an Authorized Ls Body Builder in your locality



4 Smooth, attractive Ls bodies can be built to within ½ in. of any desired dimension.

S

### Send for NEW

LINDSAY STRUCTURE

ALL-STEEL

Truck and Trailer Bodies

Lindsay Structure Division Dry-Zero Corporation 222 North Bank Drive Chicago, Illinois

Please send me the new Lindsay Structure construction bulletin.

Name\_\_\_

Addrage

City\_\_\_

State\_

### NEWSCAST



#### CMTC Disbanded; Regional Committees Are Retained

John L. Rogers, head of the Division of Motor Transport, Office of Defense Transportation, directed a letter on Jan. 23 to members of the Central Motor Transportation Committee advising them that the committee has been disbanded since due to the creation of the Office of Defense Transportation the need for the committee no longer exists. Its work will be performed by the Division of Motor Transport. Regional committees of the central committee will be continued and separate government and truck groups will be appointed for consultative purposes. Mr. Rogers was also head of the central committee.

His letter in part follows:

"The creation of the Office of Defense Transportation, by the President's executive order of Dec. 18 last, changes the situation which existed from the organization of the Central Committee last July to that date. Most of the problems upon which the committee has been working now become part of the specific functions and responsibilities of the new Office of Defense Transportation. Special divisions of that office, with adequate personnel and facilities, are being established to meet these responsibilities. It is apparent, therefore, that the need for the central committee as such, a need which was so apparent last year and which the com-mittee has so well filled, no longer exists. As for the regional committees, however, there is reason for their continued existence in order to provide centers of contact with the various regions of the country.

"As a successor to the central committee, I think we may well consider the appointment of separate consultative groups to represent government and the operating industries, bus and truck, which can be assembled for conference whenever necessary. I shall give my early consideration to this matter."

#### Trailers Exempt from "Use" Tax

D. S. Bliss, Deputy Commissioner of the Bureau of Internal Revenue, has authoritatively stated that the Federal ',Use" tax does not apply to semi or full trailers.

"Since trailers are not vehicles within the meaning of the statute, no tax would attach to the use thereof. Accordingly it will not be necessary to purchase a tax stamp for full trailers or semi-trailers."

#### TRUCK PRODUCTION

(U. S. and Canada)

	1941	1940	Per Cent Change
January	100.835	74.016	+ 35.0
February	104,172	71.690	+ 45.5
March	111.587	75,285	+ 48.1
April	102.784	76.897	+ 33.9
May	117.817	74,139	+ 58.8
lune	118,757	67.787	+ 75.2
June		74.005	
July	121,298		+ 63.9
August	83,103	41,533	+100.1
Sentember	78,413	56,703	+38.2
October		86,104	+16.0
November	110,788	93,068	+ 19.0
11 Months	1.149.711	791,137	+ 45.0
December	******	98,747	
Total		889.884	

#### 1941 Truck Statistics

Figures for the truck industry during 1941 stack up as the greatest in our history. Production (including vehicles built for military purposes) totaled 1.070.000 units with a wholesale value of \$1.020,000,000. Total truck registrations for the year (vehicles for which license plates were issued) amounted to 4,850,000, of which approximately 25,000 represent duplicate registrations due to change of ownership during the registration year. The above are preliminary figures compiled by Oscar P. Pearson, chief statistician, Automobile Mfrs. Assoc.

Additional statistics indicate that special motor truck taxes totaled \$550,000,000; that the truck business employed approximately 4,000,000 drivers and served 48,000 communities. Eighty-six per cent of all trucks are privately owned and operated and about 25 per cent of the total registration are operated on farms.

Department of Commerce figures for November, 1941, show 110,788 trucks produced in the U. S. and Canada for the month. This is 10,631 better than the preceding month of October and 17,720 units better than November, 1940. Production for the first 11 months of 1941 totals 1,149,711 units for the U. S. and Canada. This is an increase of 45 per cent over the same period of 1940.

#### Marberry Is Timken Ad Manager

R. M. Marberry, sales promotion manager of the Timken Silent Automatic Division, has been appointed advertising manager of The Timken-Detroit Axle Co. In his new capacity, Mr. Marberry will direct all advertising for Timken axles, brakes and oil heating products.

#### **Herrington Named SAE Head**



A. W. Herrington

A. W. Herrington, president of the Marmon-Herrington Co., Inc., was named president of the Society of Automotive Engineers for 1942 at the annual meeting of the society in Detroit January 12

to 16. He joined the SAE more than 20 years ago and has been active in SAE technical and administrative work for many years. He is especially noted for his design of specialty trucks for commercial and army purposes. He has served the U. S. Army as a consulting engineer and has been devoting his efforts in the SAE to synchronizing the automotive industry into one vast defense force.

#### Private Carriers State Position On Size, Weight Bill

The National Council of Private Motor Truck Owners, Inc., stated its position on the Federal size and weights bill now pending before the Senate Interstate Commerce Committee through the person of W. H. Ott who testified at a hearing on the measure January 14.

Mr. Ott stated that the private carriers as an organization takes no position on Federal regulation of size and weights on interstate operations. It does take the position that if such regulation is decided upon, it should be limited to what is necessary to accomplish specific objectives which should be closely defined.

"We believe the particular bill, S. 2015, goes far beyond the necessary objectives and we wish to present certain changes which should be made if this legislation is to be passed," he said.

To emphasize the intent that no general lowering of size and weight limits result, Mr. Ott recommended that the following amendment be inserted in section 226 (a):

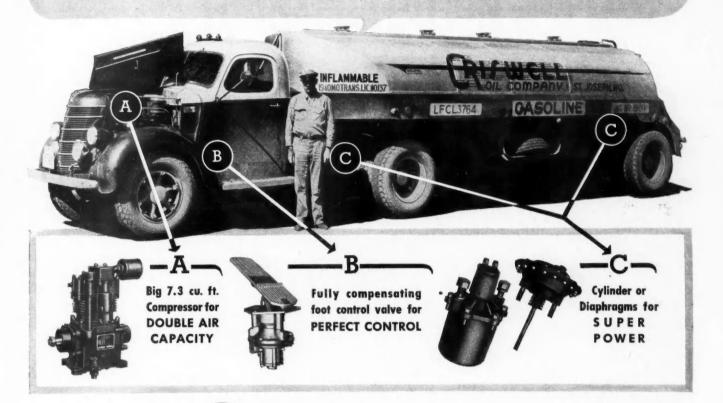
"Provided however, that nothing in this section shall be construed to authorize the commission to prescribe for interstate transportation any sizes or weights (including loads) lower than, or other regulations of practices more restrictive than those prescribed by the state or political subdivision for intrastate commerce."

The Council's second suggestion was that the bill's application be to interstate transportation by motor vehicle across state or foreign boundaries rather than to interstate commerce. Such application will accomplish most of the ends the proponents of the bill urge without disturbing state control of much else that is interstate commerce but with respect to which no complaint is heard.

L. F. Orr, chairman of the transportation committee of the National Industrial Traffic League, stated at the hearing that "present arbitrary limitations as to sizes and weights hamper economical operation of motor vehicles in various states and cause great loss of efficiency.

(TURN TO PAGE 146, PLEASE)

# SAFETY comes FIRST When you're hauling GASOLINE!



MIDLAND
Air Brakes
Assure Perfect
Control at
ALL TIMES

Safety pays you cash dividends . . . whether you haul gasoline or groceries. That is why more and more operators are now protecting car, cargo and driver by equipping their fleet with Midland Power Brakes. Midland equipment provides the extra air capacity required in city traffic or on hilly roads. It assures perfect control with "brake feel." It supplies the power to stop . . . dependably and without effort.

All units of Midland Power Brake equipment are completely interchangeable in fleet operation. All are backed by Midland's famous "Factory Rebuilt Exchange Plan." See your nearby Midland Distributor today, or write us direct for full information.

THE MIDLAND STEEL PRODUCTS COMPANY
10605 MADISON AVENUE . CLEVELAND, OHIO

EXPORT DEPARTMENT-38 Pearl Street, New York City

"Those Who Know POWER BRAKES · · · Choose MIDLAND!"



MDLAND POWER BRAKES





Cloverleaf Dairy of Salt Lake City made its purchase of 10 White delivery units pay dividends by running a contest among its drivers: the men who obtained the most new business got the new trucks. Driver competition was keen



Climbing steep embankments, fording streams and speeding over boglands, these Half-Trac scout cars, manufactured by The White Motor Company for the U. S. Army, are equipped with Wittek Noc-Out Hose Clamps, and are proving their ability to stand the gaff and keep rolling under all

conditions. Identified with the automotive and trucking industries for more than 20 years, Wittek Noc-Out Hose Clamps have established and maintained a standard of quality that guarantees a quick-tightening, perfect leakproof hose connection on radiators, heaters and booster brakes.



TYPE A — Adjustable. Recognized and accepted by the automotive industry as the standard replacement hose clamp for radiator connections, or any hose connection where an adjustable clamp is needed. Quick-tightening thumbscrew action provides easy installation with perfect leakproof seal.

TYPE G-HH — Solid band, designed especially for hose connections on all types of hot water heaters. Type G-BB—Solid band, heavy duty, for Booster Brakes.

TYPE HP - For gas station air hose, welding hose, etc., where a high pressure clamp is required.



#### WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 19)

dren laugh. It would not be surprising if some officials concerned with defense against air raids were praying for a token bombing however. small. It would doubtless have the same effect on public precautions that Pearl Harbor had on production. Certainly trucks are not now prepared to participate in blackouts in the only sensible way, that is, to continue operation under greatly reduced speed with the aid of blackout lights. To comply with present regulations trucks must pull up to the curb and extinguish all lights. Operations must cease. Truck service is interrupted, disrupted and, in fact, corrupted. It is up to the Army to relieve matters. The Army has before it specifications for a civilian blackout light on which experimental work has been proceeding for some time. The moment Army approval is forthcoming blackout lamps will be forthcoming. It is difficult to understand why the Army lags. Army vehicles are equipped with Armyapproved blackout lights from which, conceivably, civilian blackout lights cannot or need not greatly differ. Could it be that approval is being heldup to permit lamp makers to be in position to supply a demand certain to arise when approval is officially announced? It would be a good enough reason.

#### A Cooperative Army

The Army does not seem to be lacking in cooperative spirit. It has been cooperating in the substitution of materials on the critical list. Experiments are now being conducted with cast-iron pistons to save on aluminum. In fact, cooperation goes to extreme limits if one may judge by the order which recently went out to makers of Army trucks. The order stipulated that henceforth no rubber outside of tires be used in Army trucks. That would mean new types of mountings, brake lining, fan belts and radiator hose, to name the items that come first to mind. It's a changeover that cannot be made in a jiffy. Discussions are progress.

(TURN TO PAGE 48, PLEASE)

## **RAILWAY EXPRESS ADDS MORE MACKS FOR**













• Speedy, all-weather, on-schedule transportation at low operating cost-with a minimum of lay-up time and expense-that's "transportation plus"-that's what Macks are built to give! In the past year Railway Express Agency has enlarged its fleet of Mack Trucks and Tractors-which includes many of the Model EEU, cab-over-engine Mackslike the one shown above. Chosen for their high stamina and economy, these trucks are turning in top-notch, day-in-day-out performances. Mack can do the same for you! Write for information, today!

MACK TRUCKS, INC., LONG ISLAND CITY, N. Y.

THE MOST COMPLETE LINE OF TRUCKS IN THE WORLD... 1 TO 45 TONS-AND ALL HEAVY DUTY!

(CONTINUED FROM PAGE 46)

#### Labor Cooperates, Too

No. 55-AL

(right-hand)

Labor went to bat for truck transportation when the A.F. of L. Teamsters' Union addressed an appeal to President Roosevelt that all trucks be given a preference rating in the procurement of new tires. The appeal went so far as to request that trucks also be given priority on retreads. The rubber situation warranted "a searching examination of all facts by Congress," the appeal declared. We gather as much from some of the statements made by tire company executives.

#### Horses, Hoarding & Hullabaloo

In case you are interested the price of horseflesh (live) is going up. The asking price has gone up \$15 per head since Jap Stab Day. The Horse & Mule Association of America lists 14,000,000 animals on the hoof and raring to haul. Prices:

\$125 to \$150 for delivery animals: \$400 to \$600 for draft horses. Wonder what a sound Clydesdale of about 16 hands and weighing 1800 lb. would bring? . . . Fleetmen don't hoard so they have only a casual interest in OPA Henderson's assurance that batteries and spark plugs will not be rationed. It seems there has been quite a run on these items. The very reassuring news about disabled batteries is that all of the case and 85 per cent of the lead plates can be reclaimed. Hoarding is costly because the batteries must be charged regularly or they deteriorate . . . Ickes opened his big mouth again recently and yelled that if people don't get coal into their bins now they may not be able to do so later because a shortage of transportation threatens. Ickes is the man who knows all about fuels . . . remember the gasoline shortage? Anyway, a few days later Henderson spoke his piece and condemned coal price increases. What did he expect? . . . But before that Henderson did a little scaring on his own when he said that private passenger cars might be commandeered. In time he recanted . . . About the same time another bureaucratic big-shot urged housewives to stock up "emergency pantry shelves." Henderson's OPA rightly cracked down on this hoarding suggestion but in doing so bypassed the originator of the appeal. It urged housewives to resist vigorously such suggestions from marchants . . . It's a great place, Washington.



(Please resume your reading on P. 18)



The Canadian government has adopted this armored Lindsay Structure-built repair shop on wheels. Mounted on a V8 truck chassis, the body houses a lathe, drill, workbench and numerous tools for repairing anything from a field kitchen to an armored tank. The body opens at the sides when in use



No. 100-L

No. 60-AL

(right-hand)

No. 60-L

#### Against-

- Breakdowns
- Delays
- Upkeep Costs
- Replacements

WHETHER in defense production, defense service or defense against breakdowns delays—upkeep costs—or re-placements—HANSEN Hard-ware can be depended upon to "deliver".

Built especially for heavyduty and severe commercial body service, easy and economical to install-seldom requiring attention or replace-ments — Hansen Hardware stands back of both builder and user.

New products shown in the new Hansen Catalog defend you against using any but the latest designs.

#### **PRODUCTS** ILLUSTRATED

No. 45-L Sliding Door Lock, with Locking Device. Locks in open and closed position.

No. 55-AL Cab Lock (right hand), with Locking Cylinder and two keys. Built-in pull handle.

No. 100-L Rotary-and-Take-up Lock, with Locking Cylinder. Makes doors wedge-tight.

No. 124-L Slam-and-Take-up Lock with Locking Cylinder and two keys. Tamper-proof.

No. 60-AL (right-hand), fitted with Locking Cylinder and two keys. Locks securely.

No. 60-L (right-hand), with Locking Cylinder and two keys. One-piece construction.

Send for **NEW Catalog** 

Ravenswood Avenue CHICAGO, ILL

# KEY TO DEFINITIONS, ABBREVIATIONS AND REFERENCES

# DEFINITIONS

MAKE AND MODEL mestic Truck Models are listed. Only Don

Por the express purpose of best fitting the truck to the individual job most of the models listed ean be provided with objound engines, franchischen axtes etc., and these models when occupied are considered standard stock models.

CHASSIS 11ST PRICE
The chassis list price applies to the minimum standard wheelbase with standard
itree and standard equipment. All prices
are F.O.B. factory. Chassis list price
does not include the price of the Cab
unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decreases the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

SPECIFICATIONS

TABLE

CHASSIS WEIGHT
The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with own, with standard tires, with standard equipment, with crankese and cooling system full, and 5 gallons of the in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED

The tre size listed in this column is the maximum size recommended by the chandledurer of the chassis for the cross Conditions. Weight for Norman Operating (I fulferer from the standard size. Dual rears are understood; exceptions to bus

DOMESTIC

DEL

O

STANDARD

MINIMUM STANDARD
WHELLASHELLASH
The minimum standard wheelbase is the
So-called standard wheelbase on which
the Chassis List Price is based.

MAXIMUM STANDARD
WHEELBASE
The maximum standard wheelbase is the
extreme end of the standard range of
wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP. num Brake Horsepower at Given I. 1s actual dynamometer reading

GEAR RATIO RANGE
Gear Ratio Range in High—Ratios
within the range given are available at
no extra cost. Exceptions are noted.

TRACTORS

meaning not available as a tractor—all standard models may be assumed to be available as tractor—all cavallable as tractor. Exclusively Tractor models available as tractors. Exclusively Tractor models are designated (T).

# KEY TO REFERENCES

c.f.-Cab Forward design.

(C)-Converted Ford or Chevrolet modc.o.e. - Cab-Over-Engine design.

(d)—For dump or tractor service only.

e.b.s.-Engine-between-seat design.

e.u.s. - Engine-under-seat design.

(T) -- Designed for tractor use only.

(9) Gramm—Models 31, 41, 46, 56, 71, 76, 58 and 96 both gasoline and diesel available with double drop bus frames of various wheelbases 21, etc. in. engine available on Models 21, 263 etc. in. 282 etc. in. engine and 5 speed transmission available on Models 41, 46, and 50, 20 etc. in. engine and 5 speed transmission available on Models 41, 46, 56, and 71, 404 etc. in. engine and insger 5 speed transmission available on Models 21, 40, 56, and 41, 41, 46, 56, 71, 78 and 60, 1889 etc. in. engine and insger 5 speed transmission available on Models 21, 41, 46, 56, 71, 78 and 88 both gasofulion axid engels 31, 41, 46, 56, 71, 78 and 88 both gasofulian and tiesed. All other equipment

(10) Corbitt—Wheelbases optional—any wheelbase desired furnished at chassis

(15) Sterling—Available with double reduction rear axle.

(18) Willys—Advertised list price less Federal tax. Cab Piecelons 555; Panel Delivery 5849. Prices, complete with shock absorbers and front and rear bumpers. Standard tires 5,501.6—4 ply; 6,00.165—6 ply—optional.

KEY TO ABBREVIATIONS

continental.

Co—Composite
D—Dayton.
E—Ermalite.
F—Furnace iron.
G—Gunite.
N—Nickel iron.
P—Pressed steel.
P—Pressed steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

or—Hereures, —Lockheed front, Own rear. W—Lockheed front, Wisconsin rear. N.P.—New Process.
O or Ow—Own.
O or Ow—Own.
Sal—Ballsbury.
Shu—Bhlier.

C. Channel.
T. Channel tapered front and rear.
T. Channel reinforced with liner.
B. Channel reinforced with both liner and fiablate.
T. Channel reinforced with plate.
T. Channel tapered front and rear reinforced with liner.

Snip—Spiece, Tim—Timken, Ord Im—Timen-Timken, Ord Im—Timken front, Own rear.
TW—Timken-Wisconsin, Own rear.
W—Winnen-Wisconsin, Ord Im—Timken Wisconsin Herrington, W—W—Wisconsin Herrington, W—Wisconsin, Ord Wisconsin, Ord Wisconsin, Own Rear.

D. Peinforder with liner.

Ti—Tagered fron.

X. ya Braced.
S—Deep section channel frame with oak
A—Straight section sidemembers, lined
V—Straight section sidemembers, lined
V—Straight section with the legit channel sidemembers. Inches with this legit channel reinforcements, and oak inserts.

# BRAKES—SERVICE Location

2—Two Wheels, rear only.
4—Four Wheels, front and rear.
6—Six Wheels, front and rear.

**GOVERNOR STANDARD** 

# |-Internal. X-External.

Final Drive and Type

REAR AXLE

Operation

S—Spiral bevel.
W—Worm.

S—Semi-floating.

—Three-quarter floating.

—Air.
—Hydraulic and mechanical.
—Hydraulic.
i.—Mechanical.
—Vacuum.

# BRAKES-HAND

Location

C—Center of double propeller shaft.

24—Rear wheels.

24—Two-wheels praces effective on all four wheels through driveshaft.

4—Rour wheels.

(\*) Ratios other than standard at extra

(\*\*) Only one ratio.

**Gear Ratios** 

A—Radius Rods and Torque Arm.
H—Hotchkiss (springs).
R—Radius Rods.
U—Torque Arm. Drive and Torque

**BRAKE DRUMS** D—Tru-Stop disk. |--Internal. X--External.

Material

A-American Car Foundry.

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Form Axle Group.
4F—Front Axle and Forward unit of 4F—Front Axle Group.
4FR—Front Axle and Rear unit of Rear Axle Group.
4FR—Front Axle and Rear unit of Rear —Axle Group. WHEELS DRIVEN

el, identifiable by engine make listed. (D)-Diesel-engine equipped.

(N)-Not available as a tractor.

(3) Avaitable.-All models available in either conventional or c.o.e. design, oversize power plants, oil engines and six-wheel construction.

(8) Condor—These models available with double drop bus frames.

"Normal persulting conditions" (see definition of Gross Vehicle Weight for Normal Service) is meant operation on comparatively level terrain, over roads with a tractive readisance value of from 25 to 30 pounds per ton of gross vehicle weight and at controlled and uniform speeck within a range of not to exceed 45 m.p.h.

(16) Sterling—Diesel powered unit of comparable capacity available in addition to gasoline models.

and brought up to date in this issue from data supplied by manufacturers

COMMERCIAL CAR JOURNAL

TABULATED BY

693	1	Lype	-		-							4.40.7		
W				- cerer	- 0		1 ++++++	4 44444	# 000000 ###	000004	ר הסקים	000000	000004	1 0000
FRAME		Dimensions	77777		4 2	*******	44	2 444444	MKK, M. M.	#				
_		lia  abig	0x3x 0x3x 0x3x 0x3x	2x3x 2x3x 2x3x 2x3x 2x3x	x3x	MMMMMMMM	00000000000000000000000000000000000000	NAX NAX NA	A MANAGE	4 444 44 47	a lalalalala	4 44444	a latalala	1/4 /4/4/4/
- (	(*G) *A	(Min. Std. V	22222	3 22222	12x 8x2				0 50000000	2 222222	22222	व्यवस्था	2 22222	Z ZZZZ
	noi	C-A Dimens	88888	8 88888	00	44444444444444444444444444444444444444	55555555	242444 250000000000000000000000000000000	20 00 00				20000	to totake
1	1	Lype	MUUUU							2 101010101000	00 00 00 00 00 00	9 6 6 6 6 6 9	8 88881	= ===:
1	noi	Hand Locati	XXXXX	X XXXXX	= =	XXX55555	88888888	8 888888	222222	1 122222	122222	1 222222	5 555555	1 1111
		Drum	-	ब बदवदद	e A	*****	********							
DKARES	EL	Drum	388 477 603 803	200 200 200 200 200 200 200 200 200 200	104	227.00000	2380000 2380000 2480000000000000000000000000000000	00100100 00100100 00100100	4440044 444007 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	00000000				
5	VIC	Area	240000	8 800000	4 9						. 444444	444444		- 100
9	SERVICE	Operat'n Lining	38888888888888888888888888888888888888	8 22 8 8 27 8 8 27 8 8 2 2 8 8 2 3 3 4 5 9	4 6	33200000000000000000000000000000000000	370 370 370 370 370	4559 4559 536 536 536	161 161 161 195 329 329 329	000000	0000000	000000	000000	00000
	90	Lype	Market		- 4	<b>MHHHHH</b>	2222222	222222						
		Make	######################################	44444	D4IM	4444444	24444444 24444444444444444444444444444	4444444 94444444 94444444	200000	HEHERE			200000 HHHHHH	2222 E HHHH
	1:		THE HE	7 MMMM	1 0					000000	000000	22222	200000	5 5555
AXLE		Japow	30000F 31000F 32502F	32502 3350001 3500001 3500001	170	000000000	32505H 32505H 32505H 32505H 32505H 32505H 5785B	5785B 5785B 5785B 5795B 5795B				*		
XX		Make and	0000000	20000000000000000000000000000000000000	10	200000000000000000000000000000000000000	325 325 325 325 325 325 325 325							
•				FEFFE	Spi	E8888888	######################################	Sepan name	000000	000000	000000	98484 884 884 884 884 884 884 884 884 88	000000 000000	u MAN
			- @@@@@	10101		&&XX4X44		000000000000000000000000000000000000000		000000	000000	000000	2222	7777
	rfgi	Gear Ratio Range in H	0.0000	777000	19	9999000	1 B 8 8 8 8 4 8 8 4 8 8 8 4 8 8 8 8 8 8 8	F-000000F-000	-	000000	000000	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
2.3			44.000			6556566 6778 6778 6778 6778 6778 6778 67	5.74 5.74 5.74 5.74 5.74 5.74	\$2000000 \$200000000	******	* * * * .0.0	* * * * * * * * * * * * * * * * * * * *	*****		
X	enb.	Drive & Tor	HHHHH			HHHHHHM	RHHHHHH							
<	adk	T bns rasD	44444	ERESES	4		PHARA PARA	****	一	HAYE HAYE HAYE		[2, 2, 2, 2, 3, 4, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5,		. Fe. Fe. Fe. Fe
KEAR	-		0000000000	000000555	200	00 00 00 00 00 00 00 00 00 00 00 00 00				HHHHH	田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田	HHHHH	HHHHH	HHA
¥		laboM	308H 308H 308H 411H	10004	0	521H 4207H 111H 111H 111H	Tim 56411H EatA17-17000 Tim 56411H Tim 58300H EatA17-17000 Eat A9-20000 Tim 58300H	72300H 1337BH 1757H 1337BH 1757H						
	-	Make and	TO TO TO TO TO TO	10000000000000000000000000000000000000	9	5535 5544 5544 5544 5544 5544 5544	564 17-1 583 583 17-1 17-1 337	723 333 757 757						
				888888	Spl 1	88888888	E E E E E E E E E E E E E E E E E E E	E999999	555555	O WHI O O O WHI O O O O O O O O O O O O O O O O O O O	0000 000 000 000 000 000 000	0000mn	22222	5555
~	sp,c	Forward Sp	44444	400000		<u> </u>	FAFFERTX	238888 238888	000000	000000	000000	555555	000000	0000
0			4.	230 250 250 250 250 250 250 250 250 250 25	1		_	# Parents				44444	******	4444
MISSION		Make and Model	0.00 ELL 0.00 ELL 0.0	5A330 5A330 5-A-43 5-A-62 5-A-62	r48	T79 T79 T79 T79 B341 B341 B341	8004444444 8000000000000000000000000000	5-A-62 5-A-62 5-A-62 5-A-62 5-A-62 MHU MHU						
E			000000	10/0/0/0/0/0	WG	WAG MAG	4444444	Nobbob	0000 AWB 0000 AWB	22222	Own Own Own	EEEEEE	555555	5555
uw)	puat	Governor S	ZZZZZZ			ZZZZZZZZ	FERENCE	222222		000000				
-		rengcy	ZZZZZZ	7474.24.50	10		**********	******	ZZZZZZ		ZZXXZZ	ZZXXZZ	ZZXXZZ	ZZXX
	Main	Diameter and	000000	KKKKOO	=	NXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	SANANAS	22222222 232222222	555555	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	NXXXXX SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	**************************************		
	Bea	Number,	ลดดลลลล	oddddgg	2 ix	222222	SAN SAN SAN	33333333 333333333	00000000000000000000000000000000000000	22222	4/4/4/4/4	4444444	14/4/4/4/4/4	14/4/4/4
			000000	philippin	60	-	4414141414		444444	***	44444	444444	244444	***
	******	H.P. at R.I	32200000000000000000000000000000000000	2300 2300 2300 2300 2300 2300	3800	200000000	000000000000000000000000000000000000000	000000000000000000000000000000000000000	23300 23300 13300 1000 1000 1000	0000000	33000000 33000000000000000000000000000	23000000000000000000000000000000000000	23300 23300 23300 23300 23300 23300 23300	330000 330000 300000
	9	Max. Brake	000000000	986 106 1112 126 126 126 126 126 126 126 126 1	22	71-8100 80.5-3100 80.5-3100 80.5-3100 92-2800 78-2650 78-2650	22888282	0808444	888888	080808	999999	999999	999999	98088
	.31	Torque lb.	888 888 888 888 888	880020 880020 850020	=	154 180 180 180 192 192	20000000000000000000000000000000000000	222222	444440	434343	424242	404040		
	011	Comp. Rail	totalatata	5151616166	4		40400000	######################################	6555517	65555	5 17 6 19 6 19 6 19	6512017	561192 42192 1024 1024 1024 1024	5 174 192 192 192
	-	Displacem	4444888 44448888 66668888	320 320 381 5381 5404 5404 517 517	209	04444000 @@@@@@@@@	00000000	410410101010	600000	0000000	9000000 000000	699969	000000	6,6,6,6
		- I - I G	ZZZZZZZ KKKKK	23.27	40	22222222222222222222222222222222222222	330 330 371 405 405 405	\$24 \$27 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$00 \$0	222228	222222	222222	235 235 235 235 235 235 235 235	22235 22235 32235 32235 32235 32235 32235 32235	235 235 235 235
		Bore and Stroke	*****	XX44400	37.8	********	**************************************	******* 4444000	22222	XXXXXXX XXXXXXX	222222 2022222 2022222	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXX XXXXXXXX XXXXXXXX	
		No. of Cylinders,	one one one	******	26x3	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	44444444	200000000000000000000000000000000000000	Takakaka to	Lot Lot Lot	Late Late Late	The state of the s	700 m 100 m 100 m	TAXXX SSSSSSS
1			000000	8000000	4-2	00000000	200000000	0000000	&&&&&& &&& &&& &&&	000000	80000000000000000000000000000000000000	800000	0000000 000000000000000000000000000000	88888
	*	Model	THEMM	BZ BZ MKR MZR BRLR SRKR		~~~~~ <del>~</del>								
		Make and	au Bau Bau Bau Bau Bau Bau Bau Bau Bau B	BUNBB	_	200 B B B B B B B B B B B B B B B B B B	<b>664444444</b>	338 348 348 358 358 358 358						
			WWWW	Wasu Wasu Wasu	OWD									O W H
1		bese noted						0000000	200000	000000	000000	000000	000000	
	= [	Authorize Tire Size (Duals un	222222	000000	/15	2555555 25555555 25555555 2555555 255555 25555 255 2555 255 255 255 255 255 255 255 255 255 255 255 255 255 255 255	000/20 000/20 000/20 000/20 000/20 000/20	222244444	15/68 15/68 15/68 7.50/17-88 7.50/20-88	\$	88888888 88888888888888888888888888888	200-0-20 0-200-0-200-0-20 0-200-0-200-0-20 0-200-0-0-0-	\$255555 \$25555 \$255 \$2555 \$2555 \$2555 \$2555 \$2555 \$2555 \$2555 \$2555 \$2555 \$2555 \$255	2222
D-dual rear	a L	mumixaM	7.50 9.00 9.00 9.00 9.00 9.00	9.00/2 10.00/2 11.00/2 12.00/	5.00/15	988884448 988885568	00000000	10.00 11.2.1.00 12.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10.00 10	5/66	5555555	2000000	5555555	200000	5555
67	ngle			2800 2800 2800 2800 2800 2800 2800 2800		0000000	00000009	2299999		polalalalal	reference	to to to to to to	Da Da Da Da Da Da Da	Petete
P	- B	Front and Rear	288888	0000000	/158	20000000	020000000000000000000000000000000000000	200 200 200 200 200 200 200 200 200 200	168 168 208 208 208	2000 2000 2000 2000 2000 2000 2000 200	00000000000000000000000000000000000000	000000	2000 2000 2000 2000 2000 2000 2000 200	2000
-	-	Standard	877778 877779 877779	9.25/2 9.00/2 10.00/2 10.00/	4.00/158	8777 8777 8777 8771	88.25/20D 88.25/20D 88.25/20D 88.25/20D 99.00/20D	9.00/20D 9.00/20D 10.00/20D 11.00/20D 11.00/22D 11.00/24D	6.00/168 6.00/168 7.00/178 6.00/208†	6.000	888888	00/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200 50/200	6.000	2000
(	noisi	uyap aag)	00000000000000000000000000000000000000	5550 6100 6800 7400 8700 8700	850	8865 8865 8865 8865 8865 8865 8865 8865	779999999 7799999999 779999999	0000000	25055 5007 5007	0400000 000000			666666	6666
,	daja/	W eleand					558488578	8550 8650 8650 8650 8720 10000	\$2235 \$3665 \$2400 \$2770 \$2970		93365 93363 93363 93363 93363 93363 93363 93363	.3480 .3485 .3755 .3415 .3420	20000000000000000000000000000000000000	°3785 °3790 °4055 °4060
	ise la	Gross Veh	112600 12600 14000 17000 20000	220000 222000 223000 226500 35000	1700	20000000000000000000000000000000000000	22000 22000 25000 28000	232000 2320000 2440000 24000000000000000	25000 5000 7700 7700 7700	225555	9500 3500 7700 7700 7700	888888	888888	8888
EAL SAA	of married	- Warran								95 95 135 777	95 135 177	9500 9500 13500 7700	9500 13500 1700 7700	9500 9500 13500 13500
a We			555555	000000	75	2008888899	2104464 2104464 2104464	0000000	134	8669999	2000000	888888	2222222	00 00 00 00 00 00 00 00
We	1	Maximun Standard	000000											
Ne.	1	Standard	000000	222222	Pre		555555555555555555555555555555555555555			1344	888888	2220000	5522222	158 158 158
A	1	numixaM	222222	000000					W-00-4100	-1	M00004			2000
- N		Standard		2240 2440 2880 2880 3320 4175 Opt 4175 Opt			2825 2825 3025 4070 4070 4070	864 44290 44290 6030 6030 6380 6380	602 602 688 688 684	8860 8860 717 720 898 720 898	7117 860 886 788 814	837 954 954 833 839	836 862 979 840 866	863 889 1006 1032
-		Minimum Standard mumixaM	1370 Opt 1520 Opt 1600 Opt 1795 Opt 2135 Opt	22240 22240 22240 2323330 41750 41750	349	2525 2525 2525 2525 2525 2525 2525 252			4					
- IsWei	rd 38i	Chessis L. Standard Standard	222222	22240 22240 22240 2323330 41750 41750	349	888 888 888 128 128 128 128 128 128 128			4 *		MUSSE	A COOCO	MWWW WWWW	MW MW MW
- Heil	rd 38i	Chessis L. Standard Standard	C-100 1370 Opt 1520 Opt 1520 Opt 1600 Opt 1795 Opt 1795 Opt 1795 Opt 1795 Opt 1795 Opt 1795 Opt	2240 22440 2880 3320 4175	349	88 1290 88 1290 92 1560 112 1710 130-P8 2555			4		MUSSE	A COOCO	MWWW WWWW	MW MW MW
-		Chessis L. Standard Standard	(3) C-100 1370 Opt C-200 1520 Opt C-250 1600 Opt C-350 1905 Opt C-350 1905 Opt C-400 2135 Opt	22240 22240 22240 2323330 41750 41750	349	88 1290 88 1290 92 1560 112 1710 130-P8 2555		170X 175X 195X 220X 240X 260X	BL BL BN MR MR		MUSSE	6.0.e.) MU 6.0.e.) MU 6.0.e.) MU 6.0.e.) MV	(c.o.e.) MV (c.o.e.) MV (c.o.e.) MV (c.o.e.) MW (c.o.e.) MW	(e.o.e.) MW (e.o.e.) MW (e.o.e.) MW
-	rd 38i	Chessis L. Standard Standard	Able (3) C-100 1370 Opt (2-20) 1220 Opt (2-25) 1600 Opt (2-30) 1795 Opt (2-30) 1905 Opt (2-40) 2135 Opt	22240 22240 22240 2323330 41750 41750	349	88 1290 88 1290 92 1560 112 1710 130-P8 2555		170X 175X 195X 220X 240X 260X	BL BL BN MR MR		MUSSE	A COOCO	WWWW WWX	
-	MAKE	Chessis L. Standard Standard	Aval. (3) C-100 1370 Opt Able C-250 1520 Opt C-250 1706 Opt C-350 1705 Opt C-400 2185 Opt	22240 22240 22240 2323330 41750 41750	Bantam 349	285 289 289 289 289 289 289 289 289 289 289	333 3: 8288448	170X 175X 195X 220X 240X 260X 260X	Chevrolet. BK BL BL BN BN BN MR	MR *MR *MR MS	MUSSE	6.0.e.) MU 6.0.e.) MU 6.0.e.) MU 6.0.e.) MV	(c.o.e.) MV (c.o.e.) MV (c.o.e.) MV (c.o.e.) MW (c.o.e.) MW	(e.o.e.) MW (e.o.e.) MW (e.o.e.) MW

					::				1
FEFEFEFE	HHHHHHMM	444444444 <b>XXXXX</b> X	++++++++++++++++++++++++++++++++++++++	<u>++++++++++++++++++++++++++++++++++++</u>	* ::	*********	00000000	000000000	0000000
**************************************	2222222 2222222 22222222 2222222222	**************************************	HHHY WHHHH	K K COCOCOCOCO	********		####### ####### ######################	MAKAHAHA	*******
2777700 2777700 2777700 2777700	00000000 00000000000000000000000000000	27-44-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-	24400000000000000000000000000000000000	00000000000000000000000000000000000000	**************************************	2477777 2477777 24777777 24777777	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	111111111111111 	250000
333333333	0000000	2222288888	2224222222	2: 888888888		34422288 *******	** **	-00000000	873738 873738
XXXXXXXXX -		KKKKKKKKK	888X88X888	<b>665555555</b>		XXXXXXXX	XXXXXXX	XXXXXXXX	¥888888
		*********		**************************************	**********	00000000	55555555	55555555	444444
3352 3952 4022 5528 578 578 660	252 666 768 660 768 867 867 867 867	352 352 471 471 689 689	689 689 8844 8867 510 867 867	8861 867 871 868 868 868 871 871 871 871 871 871 871 871 871 87		1522244 14666444 1466666666666666666666666	22222222	88888888888888888888888888888888888888	988444 98444 98444
84444444444444444444444444444444444444	305 305 305 305 305 305 305 305 305 305	2222222 222222 222222 222222 22222 22222	2699335488313	22423333544 225333335544 22533333555 80333555	2245 2200 2245 200 200 200 200 200 200 200 200 200 20	1148 22222222222222222222222222222222222	888888888	704404 704404 704404 704404 704404	75555 7555 7555 7555 7555 7555 7555 75
>>>>	NH NA	>>>>	22222223	55222_2	2222222		2222222	2525252	222223
	2222222	22222222 22222222 22222222222222222222	VALENCE VALENC	WW. S.		2222222 EEEEEEEE	041HV 041HHV 041HHV 041HHV	0411HV 0411HV 0411HV 0411HV 0411HV	VALUE OF THE PROPERTY OF THE P
F182 F266 30000H 30000H 31000H 32500H	1005H 1005H 1005H 3000H 5000H 7450H		OH OH	33					20
3256 3256 3256 3256 3256 3256 3256 3256	2330000	F250 F7550 F7550 F7550 F7550 F7550 F7550 F7550	F450 F450 533006 35100H 35100H F450 F450 F450 35100TW	360201 360201 7452 7452 7452 7452 7452 7452 7452 7756	F322 F322 F322 T35100H 35100H 35100H 36020 Sp1.				3250 5572 5572 639 639 639
		<b>อ็ออีอีอีอีอีอีอี</b> อีอีอี	5557775577	## <b>5555555</b> 55	5555555555				Sphu u shu
	9.20 9.20 9.20 9.20 9.20 9.20 9.20	7.16 33333333	8.40 8.40 Rge. Rge.	66-1-66 833-6338 833-6338	6.33 -7.16 -7.16 -7.16 -5.30 -5.30 -5.30	R 833	-7. 16 -7. 16 -7. 16 -7. 16 -7. 16 -7. 16 -7. 16	Re 50 B	7-8-7-8-7-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8
24444545 272745 2472745 2472745	66.837-66.00	40000000000000000000000000000000000000	00000 38888	5572577 5572577 5572577 5572577 5572577 55725 55725	5.57- 6.42- 0.04. Dual Dual	23.73 2.73 2.11 2.11 Dual	5.11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	6.16- 0.16- 0.16- 0.16- 0.16- 0.16- 0.16- 0.16-	-00000000
	нининини	ппппппппппппппппппппппппппппппппппппппп	耳耳耳耳及及耳口及及	五耳: 耳耳耳耳耳:			пппппппп	ппппппппппппппппппппппппппппппппппппппп	田民民民民民民
00000000000000000000000000000000000000	WE WE	00000000000000000000000000000000000000		77777777777777777777777777777777777777	SEFERENCE SEFE	HHAY HHAY HAY BAY BAY BAY BAY BAY BAY BAY BAY BAY B	HAYE SFG HAYE SFG SFG SFG SFG SFG SFG SFG SFG SFG SFG	SFE SFE SFE SFE SFE SFE SFE SFE SFE SFE	########
90101110	53200H 54412H 56411H 56411H 58300H 75733H 66725H	0000000000	76413 58300\$ 72300 58301 A18000 A1837H A7-1350 17075 1337TW	AA	25000000 1350				56411 72300H 75743H 75743H 76810 76810 79733W
m 53300 m 54411 m 54411 m 54411 m 54411 m 55411 m 56411	8555443 865755 865755 865755	R1300 R1300 R750 R750 R1100 R1300	764 8 723 8 723 8 723 0 583 0 583 133 133 133	1910W 1757W R7501 R7501 R950 R9506 R1100 R1300 R750	R9506 R11006 R13005 1 T58301 18000 1337H A7-1350 Sp.1. Sp.1.	55555 S	0.0.0.0.		757 757 757 768 768 768
OFFFFFFF	4.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	22222222222	WEEK WELL	GGGGGGGG€	SOOL SOOL	E Sat	NA PARTE SE		ENTACT TATATA
				33.1					
79 7185F 2000V 2000V 2000V	MLU 5A330 5A430 5A430 5A430 5A620	140 T 140 T 140 T 140 T 140 T 190 T	2000 2000 2700 2700 2700 2341 2700 326	2341 2341 2341 2341 200V 2341 2341 2341	2341 2341 2200V 270V 270V 2341 8p1				5A330 3353 3353 3353 5351 7341
	2222222	COSSOSSI	<u> </u>	SACE SECTION ACTOR			88888888	88888888	200000000
222222 00000 00000 00000		KKKKNNNN TTTTTTTTT	**************************************	ス244422244 エナドドドドナナン		ZZZZZZZZ	***************************************	***************************************	#
**************************************	00000000000000000000000000000000000000	00000000000000000000000000000000000000	WAXAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ZXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	227222 12722 12722 12722 12722 127222 127222 127222 127222 12	SANAKANA Sististististis	KAKAKAKA BIRISINGINGINGI BIRISINGINGINGINGI	<u> </u>	522 222 522 222
22222222222222222222222222222222222222	444444		44444444444444444444444444444444444444	4666666666	1111111111	***********	4444444	77-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7-7	77-25 77-39 38 11 77-39 38 11 77-30 38 11
	000000000	88880000000000000000000000000000000000	96-2800 96-2800 96-2800 99-2800 114-2400 114-2400 72-2400 73-2400 100-2200 113-1800	150-1800 132-2100 77-2800 77-2800 77-2800 77-2800 77-2800 73-3000 77-2800	82-2800 86-	90-3000 95-3600 105-3600 1115-3800 1115-3800 1115-3800 1115-3800 1115-3800	000000000	1110-8200 110-8200 110-8200 110-8200 110-8200 110-8200 110-8200 110-8200 110	00000000
क का का व्या व्या व्या व्या व्या	EE 4220024		96999444490681				888888888 888888888		352207995
20044444 200777777 500744444	88 176 8 176 8 176 8 176 8 176 8 176 8 176 8 176 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1170 1170 1170 1170 1170 1170 1170 1170	82707000000 8770700000000000000000000000	7117700 711770 711770 71174 71170 71170	98888888888888888888888888888888888888		000000000000000000000000000000000000000	88 m m 88 m m 9999999999 99999999999 9999999999	8884847 6888888 78884488 5408668
00000000000000000000000000000000000000	2200488878 8820088178 2200488878 78744444	88888888888888888888888888888888888888	2220 2320 2320 2320 2320 250 250 250 250 250 250 250 250 250 2	22222222222222222222222222222222222222	263 282 282 320 282 50 40 40 40 40 50 90 133 50 14 133 50 14 14 15 16 16 16 16 16 16 16 16 16 16 16 16 16	00000000	\$55555555 \$55555555 \$6666666	NO.44 NO.44	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	XX XXXXX		KXXXXX X	XXXXXXX XX	AA AAAAAAAA	%%%%%%%%%%	XXXXXXXXX		222777 8844000
ышышышышы %%%%%%%%% жыкымыны	**************************************	Walley of the Park	00000000000 4444440044 4444440044 444444	######################################	00000000044 00444400000 2347337344	22244444	********	24444444444444444444444444444444444444	1477777 1477777
44400000 200000000000000000000000000000	ක්ස ක්ස ක්ස ක්ස ක්ස ක්ස ක්ස ක්ස ක්ස ක්ස	日日記記は出せらいけ	AAAmmines	8.70%%#ODD%	800 mm H	<u> ဇု</u> ဇု ဇု ဇု ဇု ဇု ဇု ဇု ဇု			0000000
XBX XBX QBX QBX QBX QBX QBX QBX	XXC SXXC SXXC XXC XXC	BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX BENYX	BWXC BWXC BWXC BWXC BWXC BWXC BWXC BWXC	BEST XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX				6X3X488 6X3X686 6X3868 6X3868
ESSESSESSESSESSESSESSESSESSESSESSESSESS	Ber JXC Her JXC Her JXD Wau 6MZR Her WXC3 Her WXC3 Wau 8RKR		Her CBJXD Her CBJXD Her CBJXD Her CBMXC3 Her CBWXC3 Her CBWXC3 Her DJXEL CUM AA600 Her DJXEL		Her CBJXC Her CBJXC Her CBJXC Her CBWXLG3 Her CBWXLG3 Her CBWXLG3 Her DJXC Lyc DG Lyc DG	0000000			Sud I Her J
0.450 0.550 0.50 0.50 0.50 0.50 0.50 0.5	7.50/20 8.25/20 9.75/20 9.75/20 10.50/20 10.50/20 11.25/20	20000000000000000000000000000000000000	8.25/20 9.75/20 9.75/20 9.75/20 10.50/22 10.50/22 10.50/22	50/22/22/22/22/22/22/22/22/22/22/22/22/22	8.25/20 8.25/20 9.00/20 10.00/20 9.75/20 10.50/20 7.00/16	6.50/168 15/68 6.50/20 6.50/20 7.50/20 7.50/20 8.25/20	888888888	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	9.00/20 9.75/20 10.50/20 11.25/20 11.25/20 12.00/24
				22000000000000000000000000000000000000	0000000000	<ul> <li></li></ul>	<u> </u>	2222222	6699999
20000000000000000000000000000000000000	32x6D 32x6D 34x7D 34x7D 3.25/20D 3.00/20D 3.75/20D	50000000000000000000000000000000000000	00000000000000000000000000000000000000	00/20D 00/20D 00/20D 00/20D 00/20D 00/20D 00/20D	7.00/20D 7.50/20D 7.50/20D 8.25/20D 8.00/20D 8.00/20D 7.00/20D 8.00/16D 8.00/16D	0/200000	200000000	00000000000000000000000000000000000000	8.25/20D 9.06/20D 9.75/20D 10.50/20D 10.50/20D 11.25/24D
4440000000			80000000000000000000000000000000000000	000000000000000000000000000000000000000	777 888 87 88	05555550 05555550 05555550 05555555	000000000 000000000	00000000	0000000
20000000000000000000000000000000000000		25000000000000000000000000000000000000		12500 3500 3500 44150 5200 4650 4650 4650		94228888888 9422884448	88448448	603 603 603 603 603 603 603	8836 975 1020 1100
12000 15000 15000 15000 15000 15000	12500 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000 17000	8000 112200 13200 13200 14200 16200 18000	18000 188800 188800 188800 188000 189000 189000 189000	36000 12000 13000 14700 14700 18000 18000 13500	15500 17500 17500 17500 18000 18000 18000 15500	4500 6400 6400 14500 14500 14500 14500 14500 14500 14500 14500	65666666666666666666666666666666666666	000000000000000000000000000000000000000	000000000000000000000000000000000000000
HANNER PROPERTY	00000000000000000000000000000000000000	1125 1175 1175 1175 1175 1175 1175 1175	251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 251175 25	208 208 208 208 208 208 208 208 208 208	1900000000	5500003:	2500000 10000000000000000000000000000000	22222222 20000000000000000000000000000	0000000
33333333	820000000 4400000000	1129 1139 1139 1151 1151 1151	1221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122112211221122122122122122122212221222122212221222122212221222122212221222122212222	990000000000000000000000000000000000000	222222222	12662001			
22120 22120 22120 22445 22860 3115		00000000000000000000000000000000000000	2000000 2000000 2000000000000000000000	2600 2600 2600 2600 2600 2600 2600 2600	1620 1620 1620 1620 1620 1620 1620 1620	2522 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10.447		
						HHHHHHHH	x 991 x1119 x1274 x 1274 x 1991 x11146 x1274	x22074 x32256 x32256 x32256 x32256 x32256 x32256	
DZB-1 DZC-1 DZC-1 DZE-1 DZF-1 DZG-1 DZH-1	30G 40G 50G 50G 8D 70DR 80W	7. 201 306 306 404 404 406 509 509 612 612 612 614	614DR 614HDR 702 805 806 806 806 806 (D) 513 (D) 615 (D) 805 (D) 808	(e.f.) 3068C (e.f.) 3068C (e.f.) 4048CH (e.f.) 508SC (e.f.) 6128C (e.f.) 6128C (e.f.) 6128C (e.c.) 201C (e.o.e.) 404C	(6.0.e.) 509C (6.0.e.) 612C (6.0.e.) 702C (6.0.e.) 805C (6.0.e.) 806C (D) (6.0.e.) 615C (D) (6.0.e.) 615C (D) (6.0.e.) 615C (D) (6.0.e.) 615C (D) (6.0.e.) 615C	Dodge WD-15 WD-20 WF-20 WF-30 WF-30 WF-30 WF-30 (c.o.e.) WFM-35 (c.o.e.) WFM-35	WGA-40 WGA-40 WGMA-40 WH-45 WHA-45 WHA-45 WHM-45 WHM-45	WL-50 WLD-50 WLDA-50 WK-60 WKD-60 WKD-60	BACCH BACH R-H
	500	H	= 1 : êêêê	G : 24422233	99999999	WENE	GWG WH	WKK WELL	80
22222		puou		 	2000000000	.e.) W	(c.o.e.) WG (c.o.e.) WG (c.o.e.) WH (c.o.e.) WH		
20000000	Dart	Dia	**********			lan.		: 66 : 66	Duplex
224400180	0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	999999999 7997597	8800000000	11098 111098 111098 111098	800-384395	225 200 200 200 200 200 200 200 200 200	855 855 855 855 855 855 855 855 855 855	444444	
									1

	1	Type		in in the latest terms of	++++++	EEEEEEE	5555555	EEEEEEE			2222		++++++	cols,
PRAME		Side Rail Dintensions	******	**************************************	8884 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 10003 1	722.75.21 722.75.21 722.75.21 722.75.21 722.75.21 722.75.21	7x2.75x.21 7x2.75x.21 7x2.75x.21 7x2.75x.21 7x2.75x.21 6x2.25x.19 6x2.25x.19	6x2.25x.19 6x2.25x.19 6x2.25x.19 6x2.25x.19 5.92x25x.15 5.92x2.25x.15	22224 44444 44444 44444 44444	10x2%xx 10x2%xx 10x2%xx 12x2%xx 10x2%xx 10x2%xx 10x2%xx 10x2%xx	10x2%xx4 10x2%xx4 12x2%xx4 12x2%xx4 12x2%xx4 12x2%xx4	7x3% 8x44-7% 8x44-74 9x44-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 14x14-14 1	######################################	lize tires, t
(	B.W.B.	C-A Dimen (Min. Std.	20000000000000000000000000000000000000			884.06677 884.06677 884.06677	92.937 92.937 117.07 117.07 48.066	8888000 000000 000000 000000	222222 222222	222525 222222	27272	5444400 F0000000	301 30	erage s
1	noi:	Type Type	KKKKKK	KKEEKK	KKKKKE	XXXXXXX	XXXXX II	4444444	XXXXXX	XXXXXX	<b>EXXXX</b>	666666	X X X X X	ith av
		Area Drum Material	2522388 2522388 2522388 2522388	6444 6744 6744 6444 6444 6444 6444 6444	6578 73599 844499	444444 908898989898989898989898989898989898989	**************************************	**************************************	24444 2000000 2000000000000000000000000	5578 6660 7680 5788 5788 5788 588 588 588 588 588 588	578 578 560 578 588 588 588 588 588 588 588 588 588	888888	308644 308644 308644 308644	plete w
	SERVICE	Lining Area Drum	2000000 10000000 10000000 1440000	1000000 100000 5440000 788944	33 4114 50 50 50 50 50 50 50 50 50 50 50 50 50	99999999	303 303 303 187 187 187 187 187 187 187 187 187 187	666568	8080004 8080004	3334 3354 3354 3354 3354 3354 3354	44044 474 474 474	760 760 760 760 760 760 760	221991	md com
	88	Make Location Type Operat'n			<b>33333</b>		9292929 444444 44444444		<b>33333</b>	22222 EEEEEE	141HV 141HV 141HV 141HV 141HV	LAIHV W84IA W84IA W84IA	841H 841H 841H 841H	out cab s
AXLE		bna edaM feboM	m 29500H m 30000H m 30000H m 31000H m 31000H m 32514H	m 32515H m 33006H im 35011H im 31100H im 31100H	m 31102H m 32515H m 32515H m 35011H m 35011H	666666	444444		1 50-1 h F182 h 7266 m 30000H m 31000H	m 31000H m 32500H m 33000H m 35000H m 31000H	m 31000H m 32500H m 35000H m 35000H	u 632 u 647 u 678 u 678 u 1673 u 1673	WD F12 WD F12 WD F12 WD F100 WD F200	chassis with
_	1		#8888844 EEEEEEE	<b>588488</b>	833388 EEEEEE	67 Own 67 Own 67 Own 67 Own 67 Own 67 Own	67 Own 67 Own 67 Own 67 Own 67 Own 07 Own	67	8003710 717108 11118	3488888 EEEEEE	259862 25933 EEEEE	-7.16 Shu -9.2 Shu -10.2 Shu -10.2 Shu -10.2 Shu -10.2 Shu	4. 4.5.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.	verage
23		Gear Ratio	4000000	5.71-7 5.57-7 6.07-10 5.14-6	5.71-7 5.71-7 7.571-7 7.571-7	2444444 44444444	0000044 11111188 44444688 00000	86.88 8.78 8.78 9.78 9.44 9.44	46444 \$2000 \$4000 \$4000 \$4000	7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	242 242 2542 2554 2563 2563 2563 2563	******	040444 5.00000	for a
AXLE	-	Oser and Tor	####### ########	22287 2227 3277 3277 3277 3277 3277 3277	285 287 287 287 287 287 287 287 287 287 287	HHHHHHH	NHHHHHH	**************************************	HHHHH	887 HHHH	NHHHH PERSTA	22277 22277 22277 27777	XXXXFF HHHHHH	America Se
REAR		leboM	51521H 8 53547H 8 53308H 8 55308H 8 54411H 8 55411H 8	HHHSHH	54411H 8 55411H 8 56411H 8 56301H 8 75743H 2			FFFF0000	8 850 88 8750 88 8750 88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		55411 8 56411 8 58300 8 1337H 2 1337H 2	79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 79746 22 797	0100011 00011 00011 00011	de shalan
		bna estaM	EEEEEEE	FFFFF					300FFF	22222	44111 66888	TAWWE SESSE	OWER ROWER R	hanele u
NO		Porward Sp	4444440	0000044	4400000		4444400		8	1010101044	22224	10101010000	\$000004 \$000004	
MISSION		bna eslaM leboM	WG-T9 WG T9 WG T9 WG T9 CIA 185F CIA 205V	CIA 2050 CIA 2700 CIA 2700 CIA 2700 CIA 3260 WG T9	WG T9 CC 18 185F CC 205V CC 205V CC 270V CC 270V	Own Olt Own 1GT Own Olt Own Olt Own 1GT Own Olt		0w 0NY 0w 11Y-21Y§ 0w 1GY-2GY§ 0w 0W 2CIA-01A§ 0w 2GCB§ 0w2NCA-2NC	88888 00000 1998 48888	CIA 200V CIA 200V CIA 200V CIA 270V CIA 185F	CIA 200V CIA 270V CIA 270V BL 744	Fu 5833 Fu 5A43 Fu 5A62 Fu 5A62 Fu 8A86	OWN HDS OW S-HDS OWN HDS OWN HDS OWN HDS	
pa	epus:	Governor St	********	<b>エビスススス</b>	**************************************	252-23 2727277	ZZZZZZZ	22727Z	-6-6-622	ZZZ>>>	****	XXX XX	ZZZZZZ	,
	Main	Number, Diameter and Length	222222 222222 2222222	SAN AND SAN AN	22222 22222 22222 22222 22222 22222 2222	24-22-25 24-22-25 24-22-25 24-22-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25-25 25 25-25 25 25-25 25 25-25 25 25 25 25 25 25 25 25 25 25 25 25 2	# # # # # # # # # # # # # # # # # # #	20000000000000000000000000000000000000	###### ######	00000000	OF GOX	435512 435512 435512 435512 612 612 612 612 612 612 612 612 612 6	444044 Gauguu XXXXX ENNHHH ENNHHHH	4
	·w	Max. Brake H.P. at R.P. Given	66-3500 775-3000 779-3000 779-3000 782-3000 785-2900 795-2800		882-3000 95-28000 14-28000 25-2800 25-2800 25-2800	900000000000000000000000000000000000000	000 8 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00000000	9999999	85-29067 95-28007 95-28007 18-28007 77-26007	2500 15100 1600 1600	83-2500 7 95-2200 7 25-2200 7 00-1800 5 44-1800 4	78-3400 78-3400 78-3400 78-3400 78-3400	
DETAILS	.3	Torque lb. fi	4411877 2084 444778 444778	285 307 1164 174 174	244 285 285 307 1	156 176 176 176 156 156	176 176 176 176 156 180	\$508508 \$608508	444477	2222 2222 2222 2222 2222 2222 2222 2222 2222	194 2224 284 284 5051	2286 2365 2365 2487 500 500	155 155 155 155 155 155 155 155 155 155	
	-	Comp. Ratio	00000000000000000000000000000000000000	600000	8000044 600000 100-00	22222 22222 222236 22226 2236 2236 2236	222223 222223 222223 222223 2223 2223			10101010-	4444		0000000 0000000	
BNOINE	30	Bore and Stroke Displacemen	444444 444444 20202020202020202020202020	222222 222222 8442882		*******	*****	224224 224224	*****		ZZZZZ	25 25 25 25 25 25 25 25 25 25 25 25 25 2	222222 222222	
	_	No. of Cylinders,	######################################	444400	884444	ಎಂದಿ ಎಂದಿ ಎಂದಿ ಎಂದಿ ಎಂದಿ ಎಂದಿ ಎಂದಿ ಕ್ಟು ಕೆ ಕೆಪ್ ಕೆ ಕೆ	20000000000000000000000000000000000000	**************************************	0000000 0000000	844489 844489	2222 2222 2222 2222 2222 2222 2222 2222 2222	444464	244×44	
		Make and Make land	Her JXFF Her JXFF Her JXBF Her JXBF Her JXCF		Her JXBF Her JXCF Her JXDF Her WXLC3 Her WXLC3	****			Her OXB3G Her OXB3G Her OXC3G Her JXBG		Her DJXC Bud 6DT31 Bud 6DT38 Bud 6DT38	E S S S S S S S S S S S S S S S S S S S	Own HD213 6 Own HD2138 6 Own HD2138 6 Own FC132 4 Ow HD213A 6	
SIZES	rear o rear	mumizaM bazirothuA axis eriT -au elaud) (beten esel	7.50/178 7.50/20 8.25/20 9.00/20	10.00/24 11.00/24 12.00/24 7.50/20		88.25/20-10 88.25/20-10 88.25/20-10 88.25/20-10 88.25/20-10	20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,285,280 20,280 20,280 20,280 20,280 20,280 20,280 20,280 20,280 20,280 20,	8888888	SESSESSES	9.00/20 9.75/20 10.50/20 10.50/20 8.25/20	9.00/20 9.75/20 10.50/20 10.50/20	9.00/20 11.00/20 12.00/24 12.00/24 14.00/24	7.00/158 7.00/158 7.00/158 6.00/20 7.00/208	
TIRE	D-dual rear S-single rear	Standard Front and Rear	6.00/168 6.00/208 6.00/2018 6.00/2010 7.00/2010	25/20D 00/20D 00/20D 00/20B 00/20B	200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,500 200,50	9000000 90000000 900000000000000000000	000000000000000000000000000000000000000	50016 % S S S S S S S S S S S S S S S S S S	000/208 000/208 000/208 000/208	000/20D 000/20D 000/20D 000/20D	000/20D 000/20D 000/20D 15/20D	25/20D 1.00/20D 1.00/24D 2.00/24D 2.00/24D	6.00/168 6.00/168 6.00/168 7.00/168	
	tht (no	Chassis Weig (See definition	2888 3888 4425 5200 5200 5200 5200 5200 5200 5200	65888888888888888888888888888888888888	25000000000000000000000000000000000000				200000 200000 200000 200000		88.8574 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.0000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.000 80.00	7150 9540 11600 12065 13615 13615	2222 2222 2722 2722 2722 2722 2722 272	
		distriction of the second seco	112000 112000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 12200 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 12200 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 122000 120000 122000 122000 122000 122000 122000 122000 122000 122000 1220	25000000000000000000000000000000000000	252500 252500 252500 252500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 255000 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 25500 2500 25000 25000 25000 25000 25000 25000 25000 25000 25000 25000 25				0000000	17000 215000 140000 140000	17000 19000 221500 24000	233000 233000 475000 475000	4448 65000 65000 65000	
286		mumixeM Standard	2555558 2555558 2555558 2555558				244888	2000011	222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 222225 22225 22225 22225 22225 22225 22225 22225 22225 22225 22225 22225 22225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 2225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 205 20				1255	
BASE		Minimum Stabnase	13555555		-		12883112	322211	1 22222	1 22222	131	134	1112523	
	esirq	Chassis List	2455 10455 12455 15455				* * * * * * * * * * * * * * * * * * *		730 785 870 870 1150				1115 515 605 605 605	
		MAKE	ederal (*)	(0.0.0)	000000000000000000000000000000000000000	Reg. 21T- Reg. 2GT- Reg. 29T- Reg. 218T- Reg. 2G8T- Reg. 298T-	(c.o.e.) 291W-81 (c.o.e.) 29W-81 (c.o.e.) 29W-81 (c.o.e.) 298W-81 (c.o.e.) 298W-81 (c.o.e.) 298W-81	1 Ton 2NY-81  1 Ton 2NY-81  1 Ton 2D-81  1 Ton 2ND-81  Com. Car 2GC-81	Gramm 11A (9) 31A (9) 41A (9) 60 81A (9) 60 81A	6	9888	85W 87W 92U (D) D92U (D) D98	International (11) D-2 D-2-M D-3 D-5 D-5-H D-15-H	
		Line Number	fig.	- 202133	-	M.		**************************************	3 44444			# # # # # # # # # # # # # # # # # # #	4880888 101	

252525
XXXXXXX XXXXXX XXUUXX XXXXXX UUCUUU XXXXXX XXXXXX XXXXXXX XXXXXXX XXXXXX
1405000 0038814180000000000000000000000000000000
80000440 0000000 0000000 0000000 00000000
DEBURER RESIDED STREETS REGIONS REPORT RESIDENCE RESIDEN
HH 15 68.24 8 8 8 0 0 wn F 8 8 8 8 9 0 wn F 8 9 8 8 8 0 0 wn F 8 9 8 8 8 0 0 wn F 8 9 8 8 9 0 wn F 8 9 8 9 0 wn F 8 9 0 w
REAL   Color
\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
■ 20000000 00000000 20000000 20000000000
22000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000   1-25000
Colorado
SOURCE CONTROL OF THE PROPERTY
The control of the
100/2000
\$2.50.00.00.00.00.00.00.00.00.00.00.00.00.
484-4449
### ### ### ### ### ### ### ### ### ##
444078 000000 000000 000000 000000 000000 0000
Description
22

=		Type	ath he				*****					XX				
FRAME		Side Rail Dimensions	9 14 x 8 9 6 x 9 6 9 14 x 8 9 6 x 9 6 12 x 3 9 6 x 9 6 Y	#### #### #### ####	本名は	x3xx x3xx	######################################	Secretary S	***************************************		CCCC XXXXX XXXXX XXXXX	x1%xh KX x1%xh KX		######################################	****	
-	9 .4	(Min. Std. 7	200 200 200 200 200 200 200 200 200 200	2000	## 7x ## 8x	777	XXXX 7777777 7777777	222222 2222222 2222222 2222222 2222222 2222	277 777 277 777 7	33322 22722 22723 27723 27723 27723 27723 27723	7777 7777 7777	2 : 22 22 23		11000001 2000001 2000000000000000000000	900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900331/4 900	90000x
-	nois	C-A Dimen	899	2232	5228	482	4887373	1255 1255 777	125	222222	2000	325		0000000	22888888	22888
	noi	Material Hand Locat	- ÇKK			AHH	UPPERE	566666	868888	888888	<b>K</b> <sup>4</sup> <b>K</b> <sup>4</sup>	21		<b>X555555</b>	********	##### #####
ES	613	Drum Area Drum	1162 as	742 848 990 990 EE	2444 4424 0NN	6023 6022 6022 6022	660024444 6602228877 4444488888	694 7772 7772 8672 8672 8673 8673 8673 8673 8673 8673 8673 8673	22222 22223 22223 2595 2675 2675 2675 2675 2675 2675 2675 267	758 8678 51578 59558 86778	4444	220 220 a	_	466666 466666 466666 466666	8867000 88670000 886700000	976 976 976 976 976 976
BRAKES	SERVICE	Lining	708	478 510 510	157 216 280	407 407	3330 330 330 330 330 330	884443 88444444444444444444444444444444	288 388 5507 5544 5544 6544 88	2889 2444 2448 2448 2448 248 248 248 248 248	501 7 545 7 545 7	155	_	2270 2335 2335 2335 7015 907 907 907	238 238 238 244 244 24 24 24 24 24 24 24 24 24 24 2	5738 5738 5738 5938 5938 5938
	SE	Make Location Type Operat'n	W84IA W84IA	4222 4424 4444 4444 4444 4444 4444 444	222	ZHIV ZHIV	LATHE CATHER OCTION OCT	LAIHV LAIHV W841A W841A W841A	11HV 11HV 84IA 84IA 84IA	1114 1117 1117 1117 1117 1117 1117 1117	AHHAA HHAA HHAA	BAIH		2777778 W 2777778 W 2777778	VHENT THE THE THE THE THE THE THE THE THE TH	LAIHV LAIHV WadiA
FRONT		Make and Model	TI 27452TW TI 27452TW TI 27451TW	Cla 450 Trim 35000 Trim 35100 Eat 570	Own 665290 Own 666276 Own 666029	Chev	Ford Ford Cobes Cobes Cobes	Fim 33000H Fim 35000H Fim 26452TW Fim 26452TW Fim 26452TW	Tim26482H L. Tim 33000H L. Tim26452TW W Tim 26452TW W Tim 26452TW W	Shu 672B1 Shu 672B1 Shu 673B12 Shu 673B12 Shu 673B12 Shu 673B12 Shu 673B12	Ford Chev.	Own 442P		16 F30B 16 F544B 16 F501H1 16 F51H 16 F213H 16 F313H	WWD HES	Wis 1337 II Wis 1757 II Wis 1910 V
	423 j	Otas Tasto H ni sgnasi	7.31-10.68 7.31-10.68 7.31-10.68	6.83-7.80 7.16 8.50 7.37-8.64	255-4.82 14-6.66 14-6.66	80 80 80	6.83 6.83 6.83 64-8 50-9 50-9 02 02 02 02 02 02 02 03 03 04 04 05 05 05 05 05 05 05 05 05 05 05 05 05	25-7-8 60-9-7-8 10-10-10-10-10-10-10-10-10-10-10-10-10-1	25-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-	6-9.4 60-9.2 60-9.2 10-10.0	67 17 67	8000		29-9.16 W W S3-6.8 W W C00-8.21 W C01-8.21 W C01-8.21 W C01-8.21 W C01-8.20 W	27.7.7.7.2.8.0.0.2.7.7.7.7.2.2.2.2.2.2.2.2.2.2.2.2.2	65-8-67 W 42-8-47 W 42-8-47 W 48-9-23 W 48-8-78 O
AXLE	enb.	Drive & Tor	MMM	HEER	HHH 55	HHH	HHHHHH Scooo	我我我我我	日民民民民民 20000万	REEREE 500000	2444 0000	田田		HHHHHH 000000	ИННИНИН 200000	HHHHH 67866
REAR A	Abe	T bna saoD	888	EEEE	2077	00 00 00 Fr Fr Fr	00000000000000000000000000000000000000	####### #######	NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NE NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO NEGOTOTO	EFFFFF FFFFFF	BF BF BF HY	00 00		V V V V V V V V V V V V V V V V V V V	SECTION OF THE PROPERTY OF THE	200000 200000
R		Make and find find find	Ow NS185W Own SS200W Ow WS250W	5 Tim 56400 5 Eat 1801 5 Eat 2680 5 Tim 75743	Own 665892 Own 664435 Own 665171	Cla 1300 Cla 1300 Cla 1300	Cla 1300 Cla 1300 Cla 1300 Chev 2 Chev 2 Eat 1475	Tim 58300H Wis 1337H Wis 1337H Wis 1757W Wis 1910W	Tim 76793H Tim 58300H Wis 1337TW Wis 1757KW Wis 1757W	Tim 58300H Wis 1337 H Wis 1757 W Wis 1337 H Wis 1757 W	Ford Chev. Ford Chev.	Sal 21-1 Sal 21-1		Tim 53521H Tim 54411H Wis 5002L Wis 72300H Wis 13378H Wis 1737KW	Own HS Own H Own H Own U Own U Own U	Wis 1337 Wis 1757 Wis 1910 Own HS
NS.	sp.	Forward Sp	455		949 249 430 4	222	50004444	00000	0000	0000	20 00 00 00	පස ප		000000	CO C	55550
TRANS-		Make and Model	Fu 4B86 Fu 4B86	Fu 5B330 Fu 5B430 Fu 5B430	Own664949 Own664249 Own664430	Chev BL Ford BL	Chev BL Ford BL Ford BL Cla Cla	Fu 5A430 Fu 5A430 Fu 5A620 Fu 5A430 Fu 4A86	Fu 5A620 Fu 5A620 Fu 5A620 Fu 4A86 Fu 4A86	Fu 5A430 Fu 5A620 Fu 5A620 Fu 4A86 Fu 4A86	Ford Own Chev. Own Ford Own Chev. Own	WG T84G WG T84G		WG T9 Cla B116C Fu 5A43 Fu 5A30 Fu 5A620 Fu 5A620	Fu 5B33 Fu 5B33 Fu 5A43 Own U Fu 5A43 Own U Fu 5A62	Own M Own M Own M Own M Fu 5B330
bas	1	G nonsernor S	***	222	ZZZ	XXX	ANNINNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN	***************************************	<b>大大大大大大</b>	<b>太太太太太</b> 外外外外	ZZZZ	NA NA		424444 42444	*************************************	<b>北大大大大</b>
	Main	Number, Diameter and Length	4-3 15 x 11 4-3 15 x 11 4-3 15 x 11	2222 2222 2222 2222 2222 2222 2222 2222 2222	2-4-2-4-2-4-2-4-2-4-2-4-2-4-2-4-2-4-2-4	4-23 x5 4-2-5x4 5-2-5x4	4044444 GGGGGGGGG 7,007,33,33 KXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	WARRES WARREN	77-4-3 77-4-4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	77-77-77-77-77-77-77-77-77-77-77-77-77-	2-2-4 -2-2-4 -2-2-5-4 -2-2-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -2-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-4-4 -3-	3-2.3x5.		4	00000000000000000000000000000000000000	7-3x107% 7-37x13 7-37xx13 7-27xx17 7-25xx16
w	·w·	Max. Brake H.P. at R.P Given	152-2200 152-2200 152-2200	86-3000 105-2500 105-2500 110-2400	80-4000 94-3600 94-3600	93-3000 95-3600 90-3300	93-300 95-3600 93-3000 93-3000 93-3000	112-2600 112-2600 112-2400 112-2400 26-2400 50-3000	26-2400 22000 22000 20-2000 50-1800 50-1800	12-2600 12-2400 12-2400 126-2400 50-1800 50-1800	90-3800 90-3200 100-3600 93-3200	61-3800		83-320 85-2900 030-2650 03-3000 06-2600 50-2400 50-2500	884-2800 985-2800 985-2800 06-2500 06-2500 112-2400 26-2500 26-2500 26-2500 26-2500	26-2300 38-2300 62-2000 98-2000 84-2800
DETAILS	.m	Torque lb.	2000 2000 2000	3 300 3 300 3 300 3 369	5 134 5 176	192 176 180	192222	55522255 55522255 55552255	\$500000 \$500000 \$5000000000000000000000	305 305 305 500 500 500 500	156 174 176 192	106		170 2380 2380 400 100 100 100 100 100 100 100 100 10	3330880 3330880 3600880 3600880	369 410 580 189 189
		Displaceme Comp. Rati	677 5.	318 404 504 517 517	170 6.2 226 6.2 226 6.2	235 6.61 239 266 6.7	000000 000000 000000	404 404 5.7 462 5.0 517 5.0 784	517 5.0 377 14. 474 14. 672 17	7000011 7000011	5 6 6 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	46.1		47.00.00 47.75.00 60.00	20-4400F 20-4400F 20-4400F 20-400000000000000000000000000000000000	500000 100000
ENGINE		Cylinders, Bere and Stroke	222	***** ********************************	X4.3%	4 × × × × × × × × × × × × × × × × × × ×	******** ****** ****** ******* ********	******** ******* *******	25 25 25 25 25 25 25 25 25 25 25 25 25 2	%xx4% %xx5% %xx5% 652 %xx4% 604 %xx6 672 672 672	4 x3 x 221 2 x3 x 217 4 x3 x 239 4 x3 tt 235	3½x4% 134		2844444 284484 28484 2848 2848 2848 284	7.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	%x5% 525 %x6 %x6 %x6 935 %x4 282
	-	Model	6RBR 6-5x 6RBR 6-5x 6RBR 6-5x	Vau 6BZ 6-4x4 Vau 6MZR 6-4x7 Vau 6MZR 6-4x7 Vau68RKR 6-4x7	0000 0000	@ @ @ @		MZR 6-4 MZR 6-4 SRLR 6-4 SRLR 6-4 SRKR 6-4 CAK 6-5	8000000	MZR 6-4 SRLR 6-4 SRKR 6-4 MZR 6-4 HB600 6-4 HB600 6-4	00000	442P 4-3	_	A6244 6-3 M6271 6-4 B6371 6-4 M-6330 6-4 20-R 6-4 22-R 6-4	BK BZ MKR MZR MZR MZR SHLR SHLR STR SRKR	KR OGK SGK 66544
		(peas mored)	Wau	2222	Own II. Own IT	Chev Ford	Chev Ford Ford Chev Coper Cope	WW Wash	Wau SRKR Cum AA6 Her DRXB Her DRXB Cum HB600 Cum HB600	COWWA	Ford V-8 Chev. Ford V-8 Chev.	Own 44 Own 44		CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	Wau Bi Wau M Wau M Wau M Wau M Wau Si Wau Si Wau Si	Wau SRKR Wau 140GK Wau 145GK Her HXE Wau BK
SIZES	S-single rear	Maximum Authorized Tire Size onels un-	13.50/24 13.50/24 13.50/24	9.00/20 10.00/20 11.00/20 11.00/20	7.50/16 7.50/17 8.25/20	9.00/20 10.00/20 10.00/20	9.00/20 10.00/20 10.00/20 8.25/20D 9.00/20D 9.00/20D	9.75/20 10.50/20 10.50/20 11.25/24 11.25/24	11.25/24 9.75/20 10.50/20 11.25/24 11.25/24	10.50/24 10.50/24 11.25/24 10.50/20 11.25/24	8.25/20 8.25/20 8.25/20 8.25/20	6.00/16S (18)		8.25/20 8.25/20 9.00/20 9.75/22 10.50/22	8.25/20 9.00/20 10.00/20 Opt Opt	8.25/20
TIRE	S-sing	Standard Front and Rear	12.00/24°D 12.75/24°D 13.50/25¶D	7.00/20D 7.50/20D 8.25/20D 9.00/20D	6.00/16 6.00/17 6.00/20	8.25/20D 8.25/20D 8.25/20D	8.25/20D 8.25/20D 7.50/20D 7.50/20D 7.50/20D 7.50/20D	9.00/20D 9.75/20D 9.75/20D 10.50/20D 10.50/20D	10.50/20D 9.00/20D 9.75/20D 10.50/20D 10.50/20D 10.50/20D	9.00/20D 9.75/20D 10.50/20D 9.75/20D 10.50/20D 10.50/20D	32x6D 32x6D 7.50/20D 7.50/20D	.50/168		6.50/20D 8.25/20D 8.25/20D 8.25/20D 9.00/20D 9.75/22D	7.00/20D 7.50/20D 7.50/20D 10.00/20S 12.00/20S 12.00/20S 11.00/20D	11.00/20D 11.00/20D 13.00/20B 14.00/20B 7.00/20D
	343i (noi	Chassis We (See definit	13675 15100 16775	5950 7100 7490 8250	1970 2680 3180	5870 5870 5850	5870 5870 5850 5850 5500 5500 5500 5500	8500 8500 10000 10500 10500 10500	8500 9 10000 9 10400 1 10900 1 11500 1	8800 9500 10000 11000 12500	6200 6100 6400 7	1285		4460 5060 6900 6500 9000 12500 12500	26800 7 26800 7 27800 7 29350 1 21050 1 21050 1	213250 213800 214000 11214250 126600 76600
dgie ice	W el	Orose Vehic lamned set	48000 50000 1 60000	19500 22000 25000 27000		18500 18500 18500	18500	25000 26000 26000 40000 40000 11	36000 22000 36000 40000 11000 40000	28000 28000 28000 40000 1	26500 26500 30000 30000	33000		12500 14500 18500 19500 23500 27500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 105000 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500 10500	15000 26 20000 27 22000 29 22000 29 25000 21 25000 21	30000 21 322000 21 380000 21 (x) 26 (x)
EEL-		mumixaM brabnat2	225 225 177	48888 48888	152	197	197 197 160 158 158 158	80000000 00000000000000000000000000000	222222 222223	####### 000000	8888	104		######################################	8512488 852888888 86488888888888888888888888888888	88888
WHEEL. BASE		Minimum Standard	185 185 177	140041	113	441	1114460	126 126 156 156	156 1204 156 156 156	146 146 146 146 146	1633	104		222222	120000 12000 12000 12000 12000 12000 12000	320002
93	pric	Chassis List	:::	1925 2845 3190 4190	:::	22266 2294 2294	2378 27425 27410 33531 3462	3654 4460 4961 6250 6450 7591	5350 5655 7414 8159 8259 8591	4250 5643 6651 4893 8209 8951	28875 28875 2875 2875	410	rive	23375 4500 4500 68500 8500 8500	**************************************	**7040 **7850 **8800 **10400
	MAKE	MODEL	(16) HC185 (16) HC185 (16) HC200 (16) HC250	6wart. 49A 58A 38A	StudebakerM5	Truckstell (C) TRC-18-5 (C) TRF-18-5E (C) TRF-18-5E	(C)TRF-18-5ECO (C)TRF-18-5ECO (C)TRF-18-5SDM (C)TRC-35BM (C)TRC-40BM (C)TRC-40BM	ard La Fr. 125 131 156 156 1563 201	65RH (D) 127D (E) 138D (D) 156D (D) 201D	(6.0.6.) H (6.0.6.) K (6.0.6.) J (6.0.6.) LD (6.0.6.) MD	arford	Willys(18) SCOF442P. (18) SCOF442P.	Four-Wheel-Drive	Corbitt. (10) F-12 (10) F-14 (10) F-19 (10) F-23 (10) F-23 (10) F-27 (10) F-27	W. D. HA HA HA CCU CU CU SUA SUA	MJ6 M6 M7 M10 (T) T26
			50	8	COD	E	-	8			8	2	fr.	6	(St.)	

\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$	הפוחות משמה הוחור ווחודים
PODO ELEMENO DODODOO ARODODOMA FEFFE	THE THE WAR WAR THEN TO BE
TITLE SOUTH THE PROPERTY OF STATES AND SOUTH THE PROPERTY OF STATE	00 00 00 00 00 00 00 00 00 00 00 00 00
20 55454 26454545 50000000000000000000000000000000	2222222 222222 22222 22222 22222 222222
	ESTATA FEFFE EFFE SEFEE
THE RALL NORTHERE PERSONAL ASSESSED SECOND COCCOORDERS &	11094 a 11095
000 000 000 000 000 000 000 000 000 00	0.00
88 \$400 ANNOUNCE TO THE TANK AND	
EFERM BELLETER SASSELLER BENEFIEL BENEF	5
AZ ZERO MAMMAMA TOTAL	33000TW 35000TW 35000TW 33000TW 33000TW 33000TW 33000TW 75 F544 F230W 75 F200TW 75 F20
HH SESSE TOO COULT HH HHH THE THEFT TO THE HEAD OF THE SESSE	11 330007 17 351007 17 31000 17 31000 17 33000 17 30000 1
222 WHH H WE SEE SEE SEE SEE SEE SEE SEE SEE SEE	500000 40000000000000000000000000000000
000	9784-884 9784-88 9498 00000 F
90 00000 92 1-0000 - **** CERTIFICATE PERTURBED PERTURBE PERTURBED 0001	444444 44444 FFFF EMMAN :
FF FFF SERVING BOOMS COOK COOK BOOMS COOKS COOKS COOKS	FFEET
11 25544 8650 860-250-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-250 860-	8BT1590TW 8 SBT250CH 8
TISSESSESSESSESSESSESSESSESSESSESSESSESSE	
OD BABA KREKEHH HHHLANAN ANDRORDA DORDADO 0000 000000000000000000000000000000	E 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
A 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	5.8430  B.1600
ASSESSED ON THE PROPERTY OF STREET O	NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
AND TARACHA ANTONIO MANAGEMENT AND M	24 44 44
OU TANK 44444411 INTERPRETATION IN MANCHEN TO THE TOTAL TOTAL TO THE TOTAL TO	लवालवालय वालवालक वालवा वालवाल
000 0000 0000 0000 PPPPPPP PPPPPPPPPPP	
25,555,555,555,555,555,555,555,555,555,	1125 1125 1125 1125 1125 1125 1125 1125
20	7. 12. 12. 12. 12. 12. 12. 12. 12. 12. 12
© 00000 111111140 00044440 00 44444444 0000040 000 44 000000	225444865 2250444865 225044486 22504465 225046 225046 225046 225046 225046 225046 225046 225046 225046 225046 225046 225046 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22504 22
888 44000 8888888888 884605050 8888844445 888844	本文本文章 大学的人名 在一次的人名 医生物
AND THE RESERVENCE AND CONTRACTOR OF THE PROPERTY OF THE PROPE	44000004 4044000 4444 04444
KINE BERKKEE PAREICA ABECO. BERROOM.	Con B6406 6- Con B6406 6- Con A184 Con A0826 Con A0826 Con A0826 Con A0826 Con A0826 Con A0826 Con B032 Con B03
Wau BZ  Wau MKR  Wau MKR  Wau MZR  Bud L0325  Bud V88+  Frond	On B64 Con A13 Con A13 Con A13 Con A13 Con A14
0.000000000000000000000000000000000000	7.17.5.5.0.7.5.7.5.5.0.7.5.5.0.5.5.0.5.5.5.5
CO COURT CARACTER & COCCURATION COCCURATIO	9.00,20D 7.00,20D 7.00,20D 7.00,20D 9.25,20D 9.25,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D 9.75,20D
9.00,20D 10.00,20D 10.00,2	99.000.25.25.25.25.25.25.25.25.25.25.25.25.25.
200 1250000 100000 100000 100000 100000 100000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 1	10000000000000000000000000000000000000
255 C2000 884444400 EFB88000 0100000 000000 0000000 000000 000000	35000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 118000 1180000 118000 118000 118000 118000 118000 118000 118000 118000 1180000 118000 118000 118000 118000 118000 118000 118000 118000 1180000 118000 118000 118000 118000 118000 118000 118000 118000 1180000 118000 118000 118000 118000 118000 118000 118000 118000 118000
(XX	9000000 000000 88888 428282 528282
25 4444 45484855 55888888851000 58844888 558888888888888888888888888	000000 000000
867765 867050 867050	8800 13750 13750 13750 13750 13750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 15750 157
(T) 730 ***   (T) 732 **   (T) 732 ***   (	Six-Wheele (2014) Six-Wheele (
### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 ### 1 #### 1 ### #### 1 ### 1 ### 1 ### 1 ### 1 ######	Six-W but 100 100 100 100 100 100 100 100 100 100
: a : : : : : : : : : : : : : : : : : :	25. 12. 12. 12. 12. 12. 12. 12. 12. 12. 12
250 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	*
	5

Company   Comp		!	Type	6666	118 118 118 118	CCC				11				دددد	
Compared by	PRAME	_				222	нини	4444444 %%\$\$\$\$\$		/m/m/m/m	00000 *****	WW	New York	771111	4444444 9922
Company   Comp	PRA	1		2000	Agreement All he he	8x3x   1 10 th x3x   1 10 th x3x	MKKK	**************************************	のうちのうちのい	20000000000000000000000000000000000000	**************************************	100000 100000 1000000 1000000000000000	014 x 2 x 3 x x 2 x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x x 3 x	22222 27277 2004 2004 2004 2004 2004 200	MARKEN H H H W
Triangle	(*	sion B . W	C-A Dimen (Min. Std. )											-6-6	
Part	1	uon	Type Total										-		
The column   The	-		Material						<u> </u>		FFFFF	- CEEEEE	FECCEE		<b>EEEEEEEE</b>
The column	ES	113	Area					4400000000 00000000		222222					66666000000000000000000000000000000000
	BKAKES	VICE	Area			~~~									
Property	2	SER	Operat'n												
THE PROPERTY OF THE PROPERTY O			Location	W86IA W86IA W86IA W86IA	ALTERIC	NA N	Ws6IA Ws6IA Ws6IA Ws6IA	00000000	Beihv Beihv Beihv Teia Teia	761A 761A 761A 761A 761A 761A	W84rIA W84rIA W84rIA W84rIA	L6IH L6IH L6IH W86IA W86IA	W861A W861A L61H L61H W861A	W861A W861A FO61H FO61H FO61H	LATIHY WATIK WATIK WATIK WATIK WATIK
THE PROPERTY OF THE PROPERTY O	- m	*		WALL	114H 1000TW 100TW			5000 5000 5000	0000000	000000	00000			7777	ZZZZZZZ
Part	AXLE		bna silaM laboM	6020 6020 6020 6020	88888888888888888888888888888888888888	209 1337 1910			XXXXXSS		38800 38800 388000 380000	01111111	450111	<b>45</b> 4444	888283333 568828333 66884444 668833333
THE PARTY OF THE P				20201000			Shu Shu Shu Shu				EFFEE			WH OWE OWE OWE OWE	8888888
Der gegen ber gegen ber gegen ber gegen ber gegen ber gegen bet ge		431	H ni sgnaSi			- 000	ବାବାବାବା	745 45 45 45 45 45 45 45 45 45 45 45 45 4	19 19 03 03 03 03	* * 00000	0.00.0	800004	1199494	41 67 67 67 67	84988967
Der gegen ber gegen ber gegen ber gegen ber gegen ber gegen bet ge			Ocar Ratio	2222	00 00 00 00 00 00 00	:::	80000	525-7-7-6	8-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8-	22-7 22-7 52-1 52-1 97-1	42464	**************************************	999959	φφφφφ	2000000000
Service of the control of the contro	AXLE	anb.	Drive & Tor			HHH		வரைவர்ப்பு		0000000	<b>@</b> @10@10	****	<b>我我我我我</b>	REEEEE	7777EEEE
Power and the po		adá	T bns 1890	51010101 FFFF	WWW	14年14日	2555 2555 2555 2555 2555 2555 2555 255	FB F	FEBBE	BEEFE	ANA SANA	FFFFFF	*********	FFFFFF	#EEEEAAAA
Company   Comp	REAR			4455	POO POO P			222222					410 64	55	HHRRRRR
Service of the control of the contro		,		3000 3000 3004 304	~~~~	D30	D522	ATTEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TATEST TA	ATTE	RF16 RF17 RF17 SF17 585	1800 6800 6800 W30 W45 W30		田田二二田田	HEDDOOD	TXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
### 19   Property   Pr		3.	4	00 00 E E	8888888	80 00 80	8888	WD WD	Wn I	90000	LL-00 30 00	SSSSSS	*****	BBBB88	00000000000
REPRESENTATION OF THE PROPERTY	. 7	sp.	Forward Sp	1010100				4444400				RESPECT	FEEFE	ECCEPT.	
REPRESENTATION OF THE PROPERTY	MISSION		Isbom	0V 6 6 1,703	200000		0000	5241A 52741A 52741A	2010000	252 554 7 7	11111	222222	998888	99	0000000000
West of the control o	MIS	2,	Make and	of so so to	20000000		88888	8888888			F-F-F-F-IO	55455555555555555555555555555555555555	55AAAA	44	22222444
W. T. D. CORRESPONDED TO THE PROPERTY OF THE P	bra	pues	Governor S		0000000					000000					
Compared			I					storie andreas do do		27/21/2/2/2	Arterior de	aleule/4/4	22	. 2222	76.76
Compared		Mair	Diameter	M 00 00 M	XXXXXXX	X N	XXXXX XXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	ZZZZZZ	MMMMMM	-XXXX	COCO X X X X	N NOOWW	5 x x x x x x x x x x x x x x x x x x x	K K CO CO CO K K
Chemistry   Chicago		B	and many	Pot-toto	petalalalala	1000	41-41-	***	P101-101-10	population		9999999	totaletelete	200000	27777444 24762222222
Chesais Live   Ches		'W'	Oiven	22100	28000000 280000000000000000000000000000	2500		00000000		2400 1800 1800 1800 1800	280000 280000 2800000	000000	202222	0000000	55555555
Chessis   Part   Chessis	rs	17	Max. Brake	-	24-55-195 120-54-52		4646		888848	4000040	88888	3108054	1980- 1980- 121- 124- 124-	800000	2222222
Chesses   Language   Chesses	DETAILS	.31	Torque lb.											530 530 176 176 176 176	228888444 8886889999 888889222
Comparison   Com		-		1010101	600000000	101010	4-4-4	0000000000	101010	7.7.7.	DT-170	101010101014	444444	44.0000	contraction of the contraction o
Chassis List Price   Dispuse   Chassis List Price   Chassis	ENGINE	1m		77.00	14/4 14/4		677		VR VR		677				
Wheels Driven   Character	EN		DOTE AND	A ROLO	निक् कारा निकास	4:36	20 × 0 × 0	******	******* 404.000	00000000000000000000000000000000000000	22222	4744500	888888 884400	<b>ಅ</b>	440000444
Wheels Drivers			10.0N	4444	4444444	4440	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	22222222	949494	999999	44444		000000 000044	20000000000000000000000000000000000000	
MAAN   Marcel   Drivers			120014	ವೆಪಪತ್ರ	Fügereüg	ZR KR 5GK	BR 3600 BR 3600	)232 )232 B241 B241 B341 B318	B318 3400 B400 B400 B400	B400 3600 3600 B 3600	22222	5000			NEW KER BREE BREE BREE BREE BREE BREE BREE B
MAKE			Make and	R KX	XXXXXXX	u Mu u 14	HOHE HOHE	HHAYAHH	EHEHEH	HEHEHE	EBBES	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXXXX	10H 10H 10H 10H 10H 10H 10H 10H 10H 10H	68 68 68 68 68 68 68 68 68 68 68
MAKE				5555	HHHCHHH	WWW	CKCK	0000000	COCCOC	COCCOC	BOSSE	HHHHH	HHHHH	Her For For	2222222
Chassis List Price   RASE   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882	0		-un siaud)	2222	2222222		2222	2222222	222222	228224	202444	222223	ลลู้อออล		00842235 8
Chassis List Price   RASE   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882   1882	SIZES	e rea	Authorized	9.75/ 9.75/ 10.50	8888888	555	9000	88888888	2228888	75/ 0.50 1.25 1.25	88888	288828	200505	50/2/2	25/2/2
MANKE   MANK	IIKE	ing	.may		9998999	0000	9999				88999		990000	990000	2×80809×
MANKE   MANK	- 6	8	Front and	2250	8000 800 8000 800	888	8888	8888888	8888888	2000000	00/2000	202200	5/20/20 5/20/20 5/20/20	2/50/50/50/50/50/50/50/50/50/50/50/50/50/	00/20 00/20 50/20 50/22 50/22 50/22
MANKE   MANK	-	(noi:	(See definit	0000	2000000	888		444400	0001111	000000	00000	P-000000	00.7.00	25 9.7 75 6.0 77 6.0 77 6.0	000000000000000000000000000000000000000
MANKE   MANK				~~~	90000001	180	205		100 888		126 121 137 124 124 124	080 000 000 000 000 000 000 000 000 000	1280 1280 1280 1506 1506		1062 1277 1357 1525 1640 1830 2010
MANKE   MANK	lgis soiv	W al:	Oross Vehic lamnoN rol	50000 50000 50000	\$25000 \$25000 \$25000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$0000 \$00	45000 55000	6470 6470 75000 75000	1800 1800 1800 1800 1800 1800 1800 1800	244000 244000 240000 240000 240000	844000 442000 62000 62000 62000	39000 45000 64000 64000 43000	19500 25500 32500 32500 42000	42000 52000 19500 32500 42000	222000 222000 222000 222000 220000	\$2000 \$2000 \$2000 \$2000 \$7000 \$0000 \$0000
MANKE   MANK	i um		Maximum Standard	99999 99999	850-1055 1880-1055 1880-1055	204 204	175 175 175		20000000						
MANKE   MAN	BASE	-													
MANE		144 1		1000											
MAKE		navi	Wheels Dr			999									
MAKE				5820		106X 116X M6X	4444			444444		865000 000000 000000	999999	NAMES S	228 244 444 444 444 444 444 444 444 444
Mark		AKE	ODE	D30 BD4 9108	226 256 256 256 266 266 266 266 266 266		(0)	00000000000000000000000000000000000000	246-246-246-346-346-346-	346 346 426 626 626 9626	2222	Her DSD DSD DSD DSD DSD DSD DSD DSD DSD DS		DECESSOR NAME OF THE PROPERTY	V821 V816 V823 V823 V823 V823 V823 V823 V823 V823
2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -		M	W	900g 900g (D)	6.6.00.000	W. D		E DO DO DO	DE D	ARR ARR	EEEE :	ue di i		00 00 00 00 00 00 00 00 00 00 00 00 00	H 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		20-				6	E	B	3.5.0	6.9.6	Wor	Z	::8888	EE : : : : : :	# 177-5555 8 55-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5
-auda approach		19	Line Numb	-404	+		120	-9999999 -90-9843	335525	389998 7828		344343	900000		2265526 22643575

775588 7758838 7758838 7758838 775888 77588 77588 77588 77588 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758 7758	**************************************
88.82.25.83 2.25.25.23 7.25.23	1181119988
HANNER XX	XXXXXXXXXXXX
77772 7722 833 833 833 833 833 833 833 833 833 8	00000000000000000000000000000000000000
511 511 511 511 501 501	501 501 501 501 501 501
B61HV C61HV C61HV F61HV F61HV	F61HV F61HV F61HV F61HV F61HV F61HV F61HV F61HV
Chev Chev Chev Chev Chev Ford Ford	Ford Ford Ford Ford Chev Ford
20.00 24.4 20.00 20.00 7.00 7.00	583-8 585-7 585-7 588-7 57 57 57 57 57 57 57 57 57 5
00 7-00 000 - 100 000 0	5000000
HHHHHH	HHHHHHHH
@@@@@@@	
t 1475 t 1475 ev ev t 1475 t 1350 t 1460	1350 d 1350 1475 1460 1460
SS	SSS SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
Fores	Pordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fordel Fo
100000044 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	Pro-
00000000 *****************************	200000000400 200000000000 2000000000000
23.3000 23.3000 23.3000 23.3000 24.4000 25.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.30000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.3000 26.30	95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600 95-3-8600
176 176 176 176 176 176 176 176 176 176	176 9 176 9 176 9 176 9 176 9 176
66666 666666 666666666 666666666666666	60000000000000000000000000000000000000
	**************************************
00000000000000000000000000000000000000	80 80 80 80 80 80 80 80 80 80 80 80 80 8
Cheeve	Ford Ford Ford Ford Ford Ford Ford Ford
0000000 000000000000000000000000000000	88888888888888888888888888888888888888
20000000000000000000000000000000000000	00000000000000000000000000000000000000
20000000000000000000000000000000000000	20000000000000000000000000000000000000
6250 6250 6250 6580 7.50 6690 7.50 6690 7.50 8690 8690 87.50 8690 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50 87.50	5950 7.50/20xD 8 6050 8.25/20xD 8 6800 8.25/20xD 8 6880 8.25/20xD 8 7880 8.25/20xD 8 7950 7.50/20xD 8 7850 7.50/20xD 8 7850 7.50/20xD 8
222222 222222 222222 222222 222222 22222	2822000 2822000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 282200000 28220000 28220000 28220000 28220000 28220000 28220000 282200000 28220000 28220000 28220000 28220000 28220000 28220000 282200000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 28220000 282200000 28220000 28220000 28220000 28220000 28220000 28220000 2822000000 282200000000
2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 2512810 251281	1222241 12200004 18104000
157 1116 1155 156 156	221 123 123 143 171 171 171 171 171 171 171 171 171 17
2385 2494 22013 2317 2317 2317 2317 2317 2317 2317 23	22148 22526 22526 22526 23508 23508 2450 2450
25 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	H-H-WWWW
Truckstell (c) TRC-2X4000 (c) TRC-2X4000 (c) TRC-4XD200 (c) TRC-4XD200 (c) TRC-4XD200 (c) TRF-2X250 2 (c) TRF-2X400 2	(c) TRF-2X-2500 2 (c) TRF-2X-2400 2 (c) TRF-4X-25F 4 (c) TRF-4X-25F 4 (c) TRF-4X-25F 4 (c) TRF-4X-25E
RECAPE	RRRRRR RRFFFF SC444444444444444444444444444444444
F00000000	666666666
8017246	\$385EE33373

00000000 0000000

# Stone Named IHC Chairman

Judson F. Stone has been elected chairman of the board of the International Har-He has been a director of the company since 1920 and has been identified with the company for 50 years. J. L. McCaffrey was vester Co., to fill the vacancy created by the recent death of Harold F. McCormick. elected a director and second vice-presi-

# Geschelin Aids Navy

Rear 11.25/24. †† Roar 12.00/24. ‡ Rear 12.75/24. ‡‡ Rear 13.50/24. x Front 7.00/20. † Denotes new models or change in specifications.

Joseph Geschelin, Detroit Editor, Chilton Bureau of Ships, U. S. Navy, to assist in Publications, has been appointed by the expediting the procurement and manufacturing program of the Bureau within the placed upon the use of idle facilities of automotive parts and equipment producers' automotive industry. Emphasis will

# Nation-Wide Transco Hook-Up

Ore., San Francisco and Los Angeles to Boston, New York and Philadelphia. Ser-By coordinating the facilities of nine independent truck lines, a coast-to-coast trucking service has been inaugurated by Transco System, Inc., Denver. Service of the member lines extends from Portland, vice reaches 26 states direct and 22 states through connecting lines.

# Hits Drive-Away Truckers Halt in Production

Buffalo area, will be hard hit by the halt in automobile production. Last year these The "drive-away" automobile companies, which constitute a major industry in the companies grossed approximately \$4 million transporting out of Buffalo the 200,000 new cars which were shipped there by boat from Detroit. Fees for hauling range from \$16.50 a car to better than \$20. A driveaway trucking company, as an example, is paid \$108 for hauling four new cars from Buffalo to New York City. There are about 600 of these drive-away trucks in Buffalo.

in these drive-away trucks, which may be put to good use in connection with the war. The Government has been studying uses owners some plan will be worked out to give them some financial return. Each piece of equipment has been registered with the ICC and it is presumed this inventory list is available to the War Department. There is a potential value of some kind for this idle equipment and has assured the

# New Truck Registrations by Makes by Months

	1	Auto-	Brock- way	Chev- rolet	Diam- ond T	Dedge	Fed- eral	Ford	G.M.C.	Fud-	inter- nat'i	Mack	Ply- mouth	Rec	Ster- ling	Stude- baker	White	Willys	Misc.	Total
Inuary	28	139	155	15,801	535	4,486	120	15,797	3,338	10 CD	7,446	673	866	£=	23	231	662	173	326	50,830
obruary	1941	138	128	15,778	436	4,141	136	16,531	3,118	683	6,992	632	747	84	385	123	380	182	361	50,124 40,729
larch.	1940	215	175	21,053	583	335	112	18,662	3,950	28	8,504	796	1,023	E e	283	383	902	168	377	62,413 52,290
April	1940	250	229	22,497 18,996	701	5,650	137	16,789	3,503	9.6	9,129	931	1,041	154	84.8	133	918	186	352	64,238 54,846
ay.	1941	228	244	22,332 16,735	561	6,012	156	17,290	3,704	20.00	9,023	903	1,066	157	25.	434	562	282	357	64,177 50,543
une	1941	128	179	21,722	533	5,951	114	17,325	3,800	678	8,580	580	804	138	30	103	228	214	337	62,265
luly	1940	262	250	22,893	595	6,629	158	18,122	3,261	F2	9,531	1,065	863	35	28	526	1,047	248	437	67,412
gust.	1940	235	213	17,376	538	5,692	134	14,608	3,645	22	8,822	F 98	647	137	88	92	875	256	290	56,191
ptember	1941	134	203	14,004	520	3,347	133	8,291	4,368	88	8,125	864	434	132	22	554	731	159	313	43,892
tober	1940	429	213	13,847	475	3,925	150	7,916	3,573	28	6,550	1,031	199	25	88	108	807 878	130	333	41,352
November	1940	162	162	11,845	325	3,990	121	11,247	3,324	624	6,283	758	657	119	16	333	568	125	318	33,799
even Months	1941	2,356	1,537	199,248	5,948	58,458	1,484	162,578	40,613	702	86,862	8,975	8,761	1,454	313	1,084	8,686	1,850	3,813	599,691
% Change—11 Mos.	98	+31	+40	+18	- 4	+17	1	+12	+14	12	199	+28	13	174	+19	+340	1.48	18	1.00	117

# Fie on Colorado Fee Plan

quire a truck owner to base his fee on the biggest load he expects to carry during A suit has been filed against Colorado by that state's Highway Users Conference to test the validity of a regulation designed 000 to \$400,000 a year by basing the fee on maximum loads to be carried instead of on the factory-rated capacity. "To reto raise Colorado's truck license fees \$300,the year is arbitrary and unreasonable," the complaint charged.

# RETREAD REVIEW

(CONTINUED FROM PAGE 28)

tires made entirely of reclaimed rubber. Washington has already indicated that such tires will not do for truck service. Some reclaimed rubber will be used in new truck tires but not any great percentage of it. If you have to have a guess 10 per cent seems to be the maximum reclaimed rubber content before tire life suffers so badly that to add more

of the reclaimed stuff would be working against the law of diminishing returns. The tire technicians seem to be in complete agreement with this finding.

When we asked the tire experts for advice, which we in turn could hand over to fleets, they told us that it would do no good to groan about the situation we find ourselves in. It is not the fault of the fleet operator nor of the tire manufacturer—but nevertheless the situation is very real and we must make the best of it. The way

to make the best of it, according to the tire men, is not to do too much worrying about the changes in retreading techniques or materials. They advise spending the same amount of nervous energy making sure that tires, both new and reconditioned, are cared for in a way that they have never been cared for before. The thought is that care of tires will mean more in miles of service than anything else the fleet operator can do.

To be more specific about it, the experts agree that fleet operators will have to enforce at all times the following rules if they wish to continue to roll on rubber:

1. Do not for any reason overload tires. This is the fleet operator's greatest error, according to tire men.

2. Maintain correct inflation at all times. You have more manpower than rubber and increased inflation checks will pay dividends. Do not over-inflate or under-inflate.

Make sure that drivers start vehicles gently. Spinning wheels grinds off rubber.

4. Make sure that drivers do not use brakes more severely than necessary—that they never slam them on except to prevent an accident.

Train drivers not to take corners at high speed.

Check front and rear wheel alignment regularly.

7. Impress upon drivers that no tire is made to stand bumping into

8. Do not arrange schedules that demand high-speed driving or permit drivers to drive fast. Speeds heats up tires and hastens deterioration and

### END

(Please resume your reading on P. 29)



An International chassis rests under this Lindsay Structure body designed by Ted Somers of Somers Van Company. The body has a capacity of 1400 cu.ft and weighs only 4400 lb. Its construction permits easy repair or removal of panels in case of damage



Now the emphasis is on TIME, and the money saved is

Trucks Are Getting Scarce!

All right. If you can do 6 trucks' work with only 5, then you have given an extra truck to your country. You can do it!

Send for free booklet: "Ten Ways of Getting More Work Out of Motor Trucks." THE SERVICE RECORDER CO.,

1375 Euclid Avenue, Cleveland, Ohio.

The Servis Recorder

Shows Busy and Idle Time... All Day

merely a by-product.



What We're Fighting For—Our own objectives are clear.... Smashing the militarism imposed by warlords upon their enslaved peoples.... Liberating the subjugated nations.... Establishing and securing freedom of speech, of religion, freedom from want and freedom from fear everywhere in the world.

-President Roosevelt

WE ARE PROUD TO BE OF SERVICE TO THIS CAUSE

KINGHAM TRAILER COMPANY

INCORPORATE

KENTUCKY

LOUISVILLE,

# RETAIL DELIVERIES

(CONTINUED FROM PAGE 21)

towns 50 miles from the metropolitan area and by a three-day-week delivery within that radius. Beyond that stores would have to resort to Railway Express and parcel post. Mention of parcel post led many of the traffic men in attendance to concede that their stores would begin using this service intensively.

United Parcel had no plans for

curtailment in metropolitan areas where its C.O.D. deliveries sometimes totaled 40 per cent of the whole and some C.O.D.'s required three calls, which was the limit. It was a problem which was giving them no end of concern. Other traffic men advised that their stores were limiting initial curtailment to one delivery a day where they formerly made two.

# **Cooperative Delivery**

This subject was given a thorough

going-over and aroused considerable interest. N. B. Harris, of Miller & Rhodes department store, Richmond. Va., told the gathering that Richmond stores were studying a cooperative plan in which 5,000,000 packages a year would be handled by 100 trucks. No details were available as the matter was still in the planning

Of more specific interest were facts concerning the Baltimore, Md., cooperative delivery plan. Scheduled to begin operation about March 1, some of the details were explained by G. V. Steele who represented the Baltimore stores. He informed the gathering that three of Baltimore's largest stores (Hochschild & Kohn, Hutzler and Stewart) set up a separate corporation and constructed a building to handle shipping activities, garage vehicles and handle all repairs. The three stores pooled equipment, and plan to do their own maintenance. They will deliver within an eight to 10-mile radius of the city. Beyond that they will use parcel post.

Although these details of the Baltimore cooperative delivery plan aroused considerable interest, the information available failed to satisfy the traffic men present. Unfortunately, the operation had not yet begun and experience facts could not

be given.

S. Brydon, of the delivery department of Adam, Meldrum & Anderson, Buffalo, N. Y., reported on a cooperative delivery system in operation since September, 1941. Organized as the Downtown Merchants Delivery Co., eight stores pooled their equipment for this cooperative service. Trucks deliver furniture and packages within a radius of 50 miles of Buffalo at an astonishingly low rate per package. Retailers engaged in the cooperative use a stamp system as a basis for charges; that is, a suit box is considered one unit and a 9x12 rug is counted as three units. Members buy the stamps and paste them on the packages, thus each pays an equitable share of the cooperative system. The Buffalo system operates 110 trucks; 300 packages per vehicle. Special deliveries are made by Western Union.



must be replaced should be turned in to the wholesaler for reconditioning. Ahlberg Ground Ball Bearings are the answer to the bearing shortage which is becoming more acute each day. These scientifically reconditioned ball bearings will provide new bearing performance for replacements just as they have served

thousands of users for more than thirty-five years.

You can play a definite part in the defense program by broadcasting careful maintenance of

existing bearings and by collecting worn ball bearings for Ahlberg processing. Write for AGB particulars. Let's keep 'em rolling.



# G CO Out West its PRECISION BEARINGS, INC. Los Angeles

### **Drivers & Women Subs**

Intensified use of equipment raised (TURN TO PAGE 64, PLEASE)

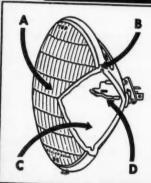


DON'T look too hard to find the light bulb in this G-E headlamp. The whole thing is a G-E MAZDA bulb. And that's the secret of its success!

The reason is that filaments are hermetically sealed inside a glass lens fused to a glass reflector. Dirt and moisture cannot enter. Loss of light from blackening is almost nil. These "all-glass" G-E MAZDA Sealed Beam lamps put 50% more light on the road than pre-1940 headlights, and last longer, with practically no loss of light. Order them for replacements on '40, '41, or '42 equipment, or in adaptors for headlamps on pre-1940 trucks and buses.

Besides the G-E MAZDA Sealed Beam lamp, "All-Glass" G-E MAZDA lamps for trucks and buses include: G-E MAZDA Driving and Passing lamps (the Glaseal System), and G-E MAZDA Fog lamps. All have the same basic construction.

Ask your jobber salesman to show you these lamps, available in housings made by leading manufacturers.



The "All-Glass" G-E MAZDA Sealed Beam lamp is shown in cutaway photo above. It's hermetically sealed. Glass lens (A) is fused (B) to glass reflector (C). Dirt and moisture can never enter to cut down light output. Fixed filaments (D) can never get out of focus with lens or reflectors. Look for the initials "G-E" on the lens.



G-E MAZDA LAMPS
GENERAL ELECTRIC
Made to stay brighter longer

(CONTINUED FROM PAGE 62)

the question of driver schedules. Would the fewer trucks to be used in a curtailed operation have to work longer; would the drivers have to work longer? Will women replace men?

Mr. Brown of United Parcel said there was no immediate need to change the work week. Mr. Kelley expressed the same opinion and added further that they are now using women in the sorting department but not in the delivery department nor as drivers. F. H. Sorensen, Auerbach Co., Salt Lake City, Utah, said his firm favored using men over 50 years of age in the delivery department and in salvage work. Older men are slower but more reliable and conscientious and have more appreciation of the need for salvage, he said.

## PM On War Schedule

The morning session of Jan. 14 took up the subjects of intensified preventive maintenance and mechanics. In the first instance, W. R. Her-

furth, superintendent of g a r a g e s, R. H. Macy & Co., New York City, cautioned against overdoing the "use to the limit" idea on automotive parts. In support of his argument, he pointed out that trying to get the last mile of wear out of a part frequently rendered that part useless for repair or salvage. This excessive wear even contributed to the failure of other parts. Parts should be held to a minimum of wear and replaced or rebuilt as dictated by sound judgment.

Few of the traffic men present had considered salvaging parts by rebuilding them. Mr. Herfurth pointed out that in the past it frequently proved too expensive to salvage a part that could be replaced at relatively little cost, but in light of the shortage of automotive materials, salvaging became a necessary and desirable procedure. He added that short-run trucks cost more to keep up than long-haul vehicles as the shortrun units were harder on tires, brakes, batteries and gas consumption. During cold spells it was harder to keep engines at proper temperatures for the low-mileage vehicles.

Mr. Brown, of United Parcel, conceded that brakes, clutch and transmission took most of the beating on package delivery trucks while springs took the licking on suburban vehicles.

The recognized need for intensified maintenance brought out the question of whether or not best results would be obtained by self-maintenance. Herfurth and Brown both favored self-maintenance. Mr. Sorensen supported this opinion with the argument that his company had tried farming out repairs for a year but found that trucks weren't getting the proper care. He claimed that his own mechanics assumed greater responsibility, were more cooperative and did better work simply because they understood the operating requirements of the trucks.

The subject of intensified maintenance brought up the question of mechanics: Could sufficiently trained mechanics be hired who were capable of meeting the stiffer maintenance requirements? The general opinion was that this was possible. Although it was observed that more mechanics would be needed because of intensified maintenance, this was balanced out by the fact that there would be

(TURN TO PAGE 66, PLEASE)



EDISON-SPLITDORF CORP., West Orange, N. J.

PRODUCE



"The face that launched a thousand ships" did the job for the ancient Greeks. Today ships are still the first line of defense—but it takes shipyards to build 'em. And Waukesha Engines . . .

Here we see Pacific Crane & Rigging, Inc. of Los Angeles moving materials on the California Shipbuilding Corp. defense projects with a Waukesha-powered Lorain Moto-Crane.

Why are so many contractors . . . on defense jobs everywhere . . . using Waukesha-powered machinery?

Because you can *push* Waukesha-powered equipment ... 24 hours a day! And still get full power capacity, smooth, grief-free operation . . . with both fuel and

lubricant economy . . . and no increase in maintenance.

Waukeshas are consistently dependable. That's why Waukesha Engines have been the standard power for the Ingersoll-Rand engine driven portable compressor . . . for 27 straight years.

That's why Waukesha Gasoline and Oil Engines are being used on every kind of unit of standard contracting equipment requiring from 5 hp. to over 300 hp. as well as for countless other industrial, stationary and automotive applications. Get the details — Bulletin 1079.

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.
NEW YORK TULSA LOS ANGELES



# WAUKESHA ENGINES

(CONTINUED FROM PAGE 64)

fewer trucks for them to maintain.

# '42 Transportation Outlook

Speaking before an attentive gathering of traffic men on the morning of January 14, Russell W. Krantz, regional traffic manager of Sears, Roebuck, Philadelphia branch, expressed his concern about the 1942 future of retail deliveries. He was of the opinion that such commodities as large radios, washing machines,

refrigerators, stoves, etc., would pass out of the picture completely and would thus eliminate themselves as a transportation problem. Sears, Roebuck, however, was planning intensified use of rails and parcel post.

In reviewing the transportation prospect for the year, Mr. Krantz had this to say:

"In general, so far as transportation is concerned, we must consider the future not so bright for retailer delivery requirements and we must expect the following: "1. Curtailment of all types of service.

"2. In creased transportation charges.

"3. Frequent but not unreasonable delays.

"4. Cancellation of all rights of shippers and consignees to route their own shipments.

"5. Cancellation of car demurrage average agreements unless shippers and receivers do much better in the future than they have done in the past.

"6. Radical departure from our usual transportation prerogatives.

"7. Multiplicity of pick-up and delivery problems.

"8. An actual coordination of all types of transportation."

# **Transport Committee Report**

The transportation committee of the NRDGA brought the conference to a close by stating its position with regard to various actions of the transport systems, motor carrier and otherwise. With respect to the proposal of the American Trucking Associations Inc., to limit trucker's liability for loss and damage, the NRDGA opposed such a proposal. The committee also opposed the proposal of the railroads to eliminate free delivery service on lcl shipments of furniture. They accepted, however, the proposition that shipping rates may rise as a result of transport difficulties.

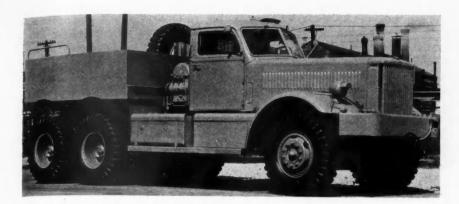
Although the traffic and delivery men in attendance were somewhat vague as to their part in the national war effort, the many problems clarified at the convention gave them a definite picture of what to expect in the next several years. Without doubt many left the meeting rooms impressed with the necessity of curtailment and determined to work out feasible plans to achieve that objective.

END
(Please resume your reading on P. 22)

# Are Welding Manual

This handbook of practical arc welding includes five parts of which the first is devoted to general welding information, parts two and three to arc welding lessons, and parts four and five to a dictionary of arc welding terms. Easily comprehensible to beginners, it also contains important information for experienced welders. Written by W. J. Chaffee, the book contains 516 pages, 512 illustrations and is published by Hobart Trade School, Inc., Troy, N. Y. Price is \$2.00.





The British have ordered 835 of these monster six-wheel trucks for its army. The vehicle is diesel-powered with an engine of 893-cu.in. displacement. Capable of a 160,000 lb. load, it is to be used as a tractor for multiwheeled trailers to transport heavy tanks over the highway and also to serve as a recovery unit for damaged tanks. Fenders on this huge vehicle are  $2\frac{1}{2}$  ft. wide, the engine weighs more than a  $1\frac{1}{2}$ -ton truck and the hood is higher than the roof of a passenger car. The truck weighs approximately 27,000 lb.

# SUMMING UP SALVAGE

(CONTINUED FROM PAGE 23)

## Salvageable Parts

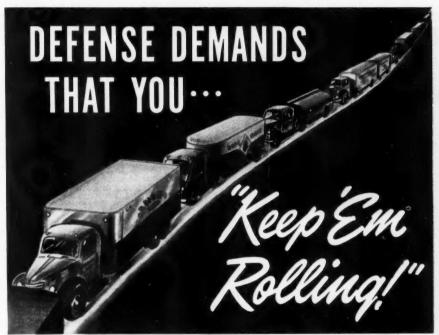
In the maintenance field, a wide variety of worn areas can be restored successfully with metal spraying. The worn portion of water pump shafts, brake cam shafts, fan shafts, cam shafts, crankshafts, brake hinge pins, knuckle pins, cross steering pins, compressor drive spiders and fan pulleys. generator and starter armature shafts, axle shafts, clutch shafts, and many other similar areas may be sprayed and finished in several metals. Worn bearing bores of wheels, transmissions, clutches and flywheels may be restored to original sizes. Pistons may be resized, and sleeves and bushings built up on mandrels of almost any material desired. Badly corroded water pump housings can be covered over with non-corrosion materials without thought being given to the porous condition of the cast-

When one considers that the materials that can be sprayed include aluminum, babbitt, brass, bronze, copper, lead, monel, nickel, iron, steel (of varying hardness and both alloy and stainless) and tin or zinc it is readily seen how an improvement may be made in the wearing quality of the materials substituted.

Another interesting feature regarding sprayed metals is the peculiar porous nature of the stratified structure which apparently succeeds in retaining lubricant, thereby reducing wear even under heavy loads.

### **Analyzing Spraying Costs**

In analyzing spraying costs, wire size, the type of gas and the pressures (Turn to Page 70, Please)





(CONTINUED FROM PAGE 69) used, are factors to be taken into consideration. Generally speaking the larger the wire used, the greater the spraying speed, and the lower the cost. The exceptions are the stiffer wires that may slow down under load, and in spraying small pieces where the edge loss may be excessive due to the greater cone of spray in the larger wires.

Where they are both available, facts regarding the two gases commonly used should be known before a choice is made. Although acetylene costs more per cubic foot than propane and a greater volume per pound of metal is used, they both require oxygen for combustion. The ratio of oxygen to acetylene for normal flame is 2.5 to 1, while a 6.4 to 1 ratio is necessary for propane, considering all metals and wire sizes. The cost of oxygen may be the determining factor.

Although increased spraying speeds result from increased gas pressures, there is an economic point at which the cost of increased gas consumption exceeds the gains involved. Also, the Fire Underwriters' operating pressure limit for acetylene in some localities is 15 lb. per sq. in., and propane pressures are not restricted.

# Savings With Metal Spray

Some hint of the savings involved in coating worn areas can be gained from the following. Water pump shafts have been sprayed with stainless steel and finished to original dimensions at one-third the cost of a new shaft, and a dividend was gained in the corrosion-resistant quality of the material substituted. Brake cam shafts can be sprayed at about onethird the cost of new shafts, and the dividend is in the excellent wearing quality of the high carbon steel coating. Six throws of an engine crankshaft can be sprayed and finished for less than one-half the cost of a new shaft, and here one finds the dividend in the long-wearing alloy steel coating applied.

### HARD SURFACING

Hard surfacing, or facing, is the process of welding on to wearing surfaces a coating, edge or point of metal capable of resisting abrasion. This process can be applied equally well to new or worn parts. It is not only an excellent salvage process but often allows weak or inadequate materials to produce greater life.

Hard-surfacing materials are usually divided into three general classes: the iron alloy metals, containing elements that increase somewhat the wear resistance and impact resistance of iron; the non-ferrous alloys that are highly abrasion resistant, and the diamond substitutes that are essen-

tially tungsten carbide.

Materials in the first class are generally used only as filling or base materials for the non-ferrous, hardfacing metals or as a binder for the tungsten carbide group. Since they are considerably lower in price than the other metals mentioned it is economical to build up worn areas with this alloy and use the non-ferrous alloy for surface hardness only. Deposits of this metal will have a tensile strength of about 40,000 lb. per sq. in., and the compressive strength may reach 177,000 lb. per sq. in. While these materials are moderately hard, they lack the excessively great wear-

(Turn to Page 72, Please)





You have a right to be nosey about what is the best buy in piston rings

Your success as a fleet operator depends on the economy of your trucks. That's why it is important to you to use only the best parts—yes, and the best piston rings. Sealed Power Individually Engineered Ring Sets are the finest ever built. Hundreds of thousands of remarkably successful installations confirm that statement. The reason is simple: the rings in each of these sets are really engineered. They fit better, work better, do a better job for you. You just can't buy better piston rings.

SEALED POWER CORPORATION

MUSKEGON, MICHIGAN

In Canada, Windsor, Ontario

FOR ALL POPULAR MAKES
OF CARS AND TRUCKS



(CONTINUED FROM PAGE 70) resisting qualities of the non-ferrous group.

The non-ferrous alloys of the second group are used almost exclusively for hard-facing against abrasion. Combined with a hardness comparable with hardened steel, they have excellent welding properties. It is the ability of these alloys to retain an original hardness factor, even in a "red hot" state, that accounts for their excellent wearing quality. Tests

have shown that above 1100 deg. F. cobalt-chromium-tungsten alloys are harder than all known alloys except the tungsten carbide group.

There are other properties of this group that are of value in hard-facing work. The low coefficient of friction of these metals, and their tendency to take a high polish, result in less surface heat being developed in contacting parts. Thus the life of other metals working in contact with them is increased. Wherever lubrication is

difficult the above two factors are of value. Another property results in a coefficient of expansion that is similar to steel, and accounts for the unusual freedom from shrinkage cracks in applications of this group to steel.

Materials in the third class are usually considered as cutting metals. However, as inserts in varying shapes and sizes they make excellent wear-resisting surfaces if welded at critical points. They are cast in handy shapes and are held in place by a binding material, usually of the first group mentioned.

# **Hard-Facing Method**

Generally, hard-facing may be accomplished by almost any standard fusing method. However, for certain applications the oxy-acetylene method has its advantages, particularly when using the metals of the second class. When large surfaces are encountered, the electric arc process is recommended, but in such cases there will be a dilution with the base metal. In most cases this will cause a reduction in the abrasion-resistant qualities of the hard surfacing.

The area to receive hard-facing should be free of rust, scale and other foreign substances. These should be removed by grinding, machining or chipping. If other cleaning methods are used a bright surface free of oil or dirt is necessary.

When preheating is required it should be done in a furnace or by neutral oxy-acetylene flame.

Some typical parts that have received hard-facing in automotive practice, are: engine valve faces and valve seats, compressor valves and seats, clutch release yokes, universal joint bearings, transmission shifter fingers, clutch release bearing housings, fuel pump shafts, water pump shafts, transmission bearing caps, valve push rods, clutch plate pressure areas, engine rocker arm tips, camshaft cam tips, gearshift lever tips, valve tappet faces and valve ends.

In all cases, the life ratio has been increased and in some cases, as high as 10 to 1.

# WELDING IN MAINTENANCE

by R. H. Clark\*

General Superintendent of Transportation, Consolidated Edison Co. of N. Y.

Today, manufacturers who have (Turn to Page 74, Please)

\*Presented at the annual meeting of the SAE in Detroit, Jan. 13.



# GRICO Tackles and Licks The Toughest Truck Jobs

The emphasis now is on efficiency,—economy—full production results from every ounce of power! Make your moderate-powered trucks do a big power job by equipping them with famous GRICO Two-Axle Drive. Here's a unit that not only steps up truck capacities but greatly multiplies truck abilities to do many jobs that ordinary truck equipment can't handle. In other words,—you get with Grico,—

# More "Guts" from Moderate Power!



New Patented greatly improved Double Trunnion Spring Suspension, shown above. The entire Grico unit is simple, rugged, and long-lived. Includes famous Rzeppa universal joint, whose constant velocity feature is one of the secrets of Grico's continuous successful operation. Grico scientifically engineered design eliminates exposed wearing parts, gives perfect control of lubricant. No other approaches it in efficiency.

Ideal for public utilities, excavating contractors, and hosts of other users. Grico equipped trucks operate at remarkably low cost, even under extreme load conditions and bad going. Greatly widen the job range. Save on first cost, operating cost, insurance. GRICO TWO AXLE DRIVE gives far greater traction, 10 point road contact, less weight per wheel, proper load distribution, lower gas and oil consumption. Supplied for leading makes of trucks. WRITE TODAY for detailed illustrated circulars.

GRICO TWO AXLE DRIVE COMPANY
19842 WEST EIGHT MILE ROAD (STATION) DETROIT, MICHIGAN

# DO-RAY TIGER-EY PLASTIC REFLEX TRUCK DEVICE

Lens made of time tested plastic ma-terial. 18 gauge, heavy steel frame with double thick side wall extending beyond face of lens

for added protec-

tion. Reflects light straight on or at angles at much greater dis-tance than required by law. Available in red or amber lenses. Sturdy, efficient, durable.

No. 100-0 (Oval) List... 95c No. 100-R (Round) List... 95c No. 100-F (Flexible) List \$1.10



# DO-RAY UNIVERSAL MIRROR WITH RUBBER BUMPER GUARD

Adjustable to any position. Range of extension 18 to 2714 inches. Diameter of head 53% inches. Rubber guard reduces chances of breakage. Mirror, held in place with metal bezel, can be replaced if broken. Black enamel finish. Can be installed either on hinge or body.

No. 1319 — List Price \$1.95



# DO-RAY FLEX-FIT 2-WAY TRUCK AND BUS LIGHT

Flexible, fits all curved and flat surfaces. Heavy vulcanized RUB-BER moulds body and all contact strips into one inseparable unit. Rustproof, dustproof, waterproof and shockproof. Specially designed 234 inch lens throws light straight ahead and at 90° angles. Available in red, green, amber or white lenses.

No. 1132R-List Price \$2.90



3-in-line marker, clearance or fender lamp. Sturdily constructed. Heavy gauge metal, black enamel base. Resilient rubber pad permits mounting to either flat or curved surface. Scientifically designed lens with 1½ C. P. bulb provides sufficient light to meet all S. A. E. requirements. Battery drain reduced 50%. No. 1203 — List Price \$1.30

# NU-RAY JUNIOR UNIVERSAL STOP AND TAIL LAMP

The Nu-Ray pat-ented feature is incorporated in the lens which has 100% more lighting area than the ordinary tail lamp. 15-3 C. P. bulb. Body and bracket of heavy gauge metal. Bright Udylite finish. A leader in the low price field of stop and tail lights.

No. 167 — Complete with Plug and Bracket. List Price......\$1.15 "WE'VE CERTAINLY GOT THINGS TO DO"

> "YOU BETCHA" . . . AND IT'S SWELL TO ROLL ALONG WHEN YOU'RE

П

On the home front, as well as on the war front, AMERICA MUST "DELIVER THE GOODS." Fleet owners have an important part to play in the nation's march to victory. Now, as never before, trucks properly protected with DO-RAY SAFETY LIGHTING AND REFLECTING EQUIPMENT can pay bigger dividends in efficient operation. DO-RAY products have been selected by manufacturers of mobile units for the United States Government as standard equipment.

Ask your wholesaler, or write direct



COMPAN 1458 S. MICHIGAN AVE. . CHICAGO

ITING AND REFLECTING EORIPMENT

(CONTINUED FROM PAGE 72) always provided vehicle operators with a vast store house of spare parts are responsible for supplying the requirements for a mechanized war in the field. Spare parts are more difficult to obtain. Vehicles under repair are being tied up longer than has been customary. Welding can serve us.

Welding has played an important role in automotive maintenance. In normal times it is recognized as an invaluable time saver, restoring fenders, body panels, motor pans, crankcases, body cowls, and innumerable other parts of vehicles.

Today I believe that one of the first steps that can be taken by the operator, to help himself in getting his vehicles back on the road, is to make a study of what is going into the junk boxes. These may become potential stockrooms, and if he has not already done so, he should start to establish a psychology of thrift among his mechanics. Larger companies, aware of the mounting ex-

pense in operating motor vehicles and appreciating the savings in a salvage program, have been doing this for years. But today it must be intensified by a closer scrutiny of every worn or broken part to determine what can be done to save it. Perhaps parts now on shelves could be exchanged for an old part, which in turn could be welded and returned to stock. This would minimize waiting time.

There are generally two welding methods employed: The oxy-acetylene or gas, and electric or arc welding processes. There are many types of equipment for both. In my organization, by the use of acetylene welding we are successfully salvaging upper and lower crankcases, cylinder blocks, cylinder heads, valve rocker arms, water jacket covers, upper and lower radiator domes, transmission cases and shifter head covers. The number of these parts still going into the scrap boxes will be astounding if figures were available for the country at large. Mufflers and parts relative to the entire exhaust system may be successfully renewed. True it is that a great many of the parts quite obviously require machine work after the welding to present smooth working surfaces and to restore manufacturer's tolerances. Going to the rear of the chassis, rear axle differential carriers may be saved. Well worn brake drums can be re-used by shrinking a band around them and machining a new surface inside. Brake rod clevises and brake arms can be built up by filling the holes and redrilling. This applies also to brake shoes and their related linkage.

Those of us who operate considerable auxiliary equipment from our vehicles such as manhole pumps, winches, cranes, air compressors and underbody hoists for dump trucks will find plenty of opportunity to make repairs by acetylene welding. These vehicles are usually employed on construction work which invariably takes a heavy toll of all units, particularly chassis and body. We have saved the labor and expense of rebuilding old dump bodies by lining them with steel 3/8 in. thick on floors and 1/4 in. on the sides. All joints and angles welded. The truck and roller guides of underbody hoists, thrown out of line or bent by strains caused by overloading, are

(TURN TO PAGE 76, PLEASE)



3AX Full Torque Power Take-Off.

MANUFACTURING CO.

Kalamazoo, Mich.



### TOUGH OIL-PUMPIN ENTLE 0 N CYLINDER

 Taxi cab service provides an acid test for cars and motors. Cabs really take a beating-day and nightand so do their piston rings. Here's a typical example of how Steel-Vents stand up under that around-the-clock beating.

". . . we always replaced our cabs every year with new ones until three years ago when the Hastings Jobber persuaded us to try rebuilding our motors. Using Hastings Steel-Vent Piston Rings, Valv-Rings and Expanders, we now are getting forty to fifty thousand additional miles out of these rebuilt cabs with a minimum of oil consumption and cylinder wear."

from a Florida cab and baggage company.

On your next ring job, replace with a set of Steel-Vents. Keep a careful record of their performance and let them prove for themselves how they stop oil-pumping and check cylinder wear.

HASTINGS MANUFACTURING COMPANY . HASTINGS, MICH.

Hastings Mig. of Canada, Ltd., Toronto
Piston Rings • Piston Expanders • Valv-Rings

上一十十二 g. Check Cylin (CONTINUED FROM PAGE 74) straightened by the application of heat and bending equipment. Heat properly applied by an oxy-acetylene torch, may be employed to straighten fenders, body panels, chassis and steel body frames.

Many commercial vehicle operators accustomed to buying a chassis of special frame length to fill their particular requirements, would do well to consider acceptance of a manufacturers' standard chassis and make their own changes. Welding equipment would be helpful on this type of work. This would speed truck construction and relieve factory employees for other work.

By means of electric welding we are repairing cracked chassis frames and reinforcing them with a fish plate welded into position. A channel may also be welded inside the side rails for additional reinforcement. The bracket and housing groups may also be revived by this process. Such items as spring brackets, steering post brackets, fender

brackets, fly wheel and clutch housings, rear end housings, propeller shaft housings, or third members fall into this category. Wheel hubs may be built up and remachined to size. Wheels make excellent subjects for electro welding. Cracks which run in radials in the webbing between the steel spokes may be eliminated. and on certain types of truck wheels. spoke ends worn down by continuous weaving, may be rebuilt and machined. Old style 18 degree pneumatic tired truck wheels of this type may be changed over to the modern 28 degree type with no more difficulty than is encountered in making the repair just mentioned. Many of these old wheels may have to be converted in the very near future, to offset our inability to purchase 18 degree rims.

### DISCUSSION

Discussion of Mr. Cumming's paper by John Hammond, Metallizing Corp., Detroit, disclosed that his company had developed a lathe tool which improved on the torn thread surface for bonding the sprayed metal to the sprayed surface. After the thread is cut this tool, which has a knurling effect, mushrooms the top of the threads. This makes it necessary for the sprayed material to actually break original metal away before the sprayed metal can part from the sprayed surface.

The interest of several fleet operators was expressed by W. A. Taussig, Burlington Transportation Co., when he asked if he could successfully get results in metal spraying provided he had a good machinist and a good welder. The answer was that all he needed was a good machinist. The actual spraying of the metal is simple and can be taught to a man in one-half a day to one day. The preparation of the surface for spraying is the hardest part but it is no problem to a good machinist, who needs only a little instruction.

H. L. Eberts, Montreal Tramways, wanted to know if parts could be prepared for spraying and then left overnight before spraying. Mr. Hammond answered him by saying that it was the practice to wrap parts after preparation in brown paper and spray them when convenient to do so.

### END

(Please resume your reading on P. 24)



to guess at performance—use AIRTEX Fuel
Pumps for guaranteed results!

AIRTEX AUTOMOTIVE CORPORATION
FAIRFIELD ILLINOIS

diaphragm are producing millions of miles of

economical, trouble-free performance on all

types and makes of cars and trucks—are helping

to keep America's automotive might at full

strength and peak performance. This is no time

# 3 TYPES OF HEAVY-DUTY BRAKE LINING Each Best For Its Own Job



American Brakeblok "Regular" Brake Lining for manually operated braking systems.



American Brakeblok "1000 Series"Brake Lining for vacuumbooster braking systems.



American Brakeblok "2000 Series" and Thick Blocks for air-brake equipment.

AMERICAN BRAKEBLOK now offers you three specialized Brake Linings to meet special needs, PLUS a free Brake Lining Advisory Service to help you adapt these types to your particular operating problems. Let your American Brakeblok representative put our engineering facilities to work for you... ask him to fill in a Brake Lining Advisory Service form for your fleet, or write direct to 4600 Merritt Avenue, Detroit, Michigan.



Master stocks in 38 NAPA Warehouses.

Jobbers everywhere give prompt service.

American Brakeblok Division of The American Brake Shoe & Foundry Co.

Detroit, Michigan

Americantok
Brakeblok
Brake Lining

NAME
PRICE
QUALITY\*

\*A Top Quality Lining for Every Application

FEBRUARY, 1942

When writing to advertisers please mention Commercial Car Journal

# RUBBER RATION

(CONTINUED FROM PAGE 24)

and tire dealers and distributors illegal sales. Naturally, much confusion has arisen.

Since the original rationing order was issued numerous clarifications and definitions have been forthcoming in response to questions. Some of these clarifications, as set forth by Leon Henderson of the Office of Price Administration, are as follows:

The vehicle on which the new tire,

casing or tube is to be mounted must be included in one of the categories enumerated in the official rationing order and thus constitute an "eligible" vehicle.

Tires, tubes, etc., will be allowed only if the vehicle cannot be replaced by another vehicle owned or operated by the applicant, and which is equipped for service but not fully employed.

The new tire, casing or tube must be installed at once on a wheel or rim to replace a tire, tube or casing. At no time must there be more than one spare tire, casing or tube of a given size on each eligible vehicle,

New tires will only be issued if old tires cannot be retreaded or repaired and only if the applicant agrees to trade in his old tire as directed by the OPA.

In addition to the above, the Office of Price Administration issued a series of interpretations in the form of questions and answers. They are as follows:

- Q. A certificate holder purchases a new tire which blows out or is otherwise destroyed. Does the purchaser need a new certificate to obtain a tire to replace the tire so destroyed? A. Yes.
- Q. Is a tire, for which the local board issues a certificate in the manner described in the preceding question, taken from the local quota? A. Yes,
- Q. May a retail auto sales agency put its own new tires on used cars to be sold to the public? A. No.
- Q. What are the general provisions relating to obsolete tires and tubes? A. Certificates for the purchase of obsolete types of tires and tubes may be issued by the local board without regard to quotas, provided the applicant establishes his need for such types and agrees to trade in tires to be replaced.
- Q. An eligible vehicle has four serviceable tires and a spare which is not serviceable. May the local board, subject to its quota, issue a certificate to enable the operator of such vehicle to obtain one serviceable spare? A. Yes. But the local board has discretion to require the applicant to obtain a retread or used tire for this purpose.
- Q. May tires be obtained for trucks of a warehouse jobber used to distribute semi-finished steel from the jobber's warehouses to steel processors? A. Yes, if the trucks are used exclusively for this or other authorized purposes.
- Q. Is a car operated by a volunteer Red Cross worker an eligible vehicle? A. No.
- Q. May a manufacturer of new tires, tubes, or casings sell to the manufacturer of new vehicles tires, tubes, or casings to be used as part of the original equipment of such vehicles? A. Yes, with the approval of the Office of Production Management.

(TURN TO PAGE 80, PLEASE)



FOR Out-of-tune HORSEPOWER



# WHAT CASITE DOES:

Frees sticky valves and rings.

Improves gasoline mileage.

Cleans out sludge and gum...

and keeps them out. Retards
formations of engine varnish.

Improves lubrication. Makes
motors start easier and quicker
in winter weather. Breaks in
new or reconditioned motors.

USE CASITE It cleans out power-destroying sludge and gum and keeps them out... frees motors for quick pick-up and better gas mileage. In addition, Casite's oil-carrying ability improves lubrication... makes motors run smoothly, willingly.

You'll get longer life, fewer repairs and better mileage if you use Casite. Try it today! Your maintenance records will prove the value of Casite.

THE CASITE CORPORATION . HASTINGS, MICHIGAN

CASITE

CLEANS OUT MOTORS . KEEPS MOTORS CLEAN

(CONTINUED FROM PAGE 78)

Q. May a certificate holder lease from a manufacturer new rubber tires, casings, or tubes of the number and size specified in the certificate? A. Yes, provided the lease is made pursuant to an agreement or renewal of an agreement in effect on December 11, 1941.

· Q. Are seconds of new tires or tubes "new" tires or tubes? A. Yes.

Q. Can local tire rationing boards charge a fee for the issuance of a tire certificate? A. No. Exaction of a fee

under color of authority in violation of regulations would be illegal.

Q. Does the OPA set quotas limiting the number of tires which each dealer may sell? A. No. No quotas apply to sales by dealers. Local boards cannot issue tire certificates for new tires or tubes in excess of the quotas assigned to them. Dealers may sell as many tires or tubes as are requested by purchasers who hold tire certificates.

Q. A tire dealer has sold a tire and has guaranteed to replace it with a

new tire if the original tire proved defective. Can the tire owner exchange a tire which proves defective for a new tire? A. No. New tires can be delivered only to persons who hold certificates. If the person is entitled to an adjustment on the guarantee, he should seek a monetary settlement from the person from whom he purchased the tire.

Q. Can tires in possession of seller on which full payment has been made be delivered to the purchaser? A. No.

Q. Can tires on which a down payment has been made but which are still in the possession of the seller be delivered to the purchaser? A. No.

Q. Can tires now owned and in possession of a fleet operator be transferred from one of his fleet garages to another? From truck to truck? A. Yes.

Q. To whom must one apply for modification in the list? A. Leon Henderson, Office of Price Administration, Washington, D. C.

Q. Does the exception in section 404 (e) (9) relating to deliveries to ultimate consumer prohibit the delivery of coal to consumers? A. No.

Q. Are trucks used by a retail grocer to obtain supplies from wholesalers entitled to tires? A. Yes, provided they are not used also for retail deliveries or non-qualified uses.

Q. Are wholesale grocers' trucks, used to make deliveries to retailers, eligible vehicles? A. Yes.

Q. Are trucks used by newspapers to make deliveries of newspapers in wholesale lots to news dealers eligible vehicles? A. Yes.

Q. Are trucks used for the delivery of single papers to homes in rural areas eligible vehicles? A. No.

Q. Are trucks used for retail deliveries of heavy goods, e.g., furniture, eligible vehicles? A. No.

Q. Are trucks used to transport laundry from central dry cleaning establishments or laundry establishments to retail stores eligible vehicles? A. Yes.

Q. Where qualified trucks are used over extensive areas, to which board should owner apply for tires? A. To the local board in the state and county where the trucks are registered. In case of necessity the regulations provide for obtaining tires from a board other than that having jurisdiction to be charged against the quota of the home board.

(Please resume your reading on P. 25)





Keeping any fleet going in New York City traffic is no job for an amateur. But when your fleet consists of 73 furniture trucks, of 1½ to 2½ ton capacity—and you have to maintain regular deliveries within a 150-mile radius—you really have a job on your hands. That's exactly the job of Mr. Magnussen, fleet superintendent for Ludwig Baumann—one of the largest furniture retailers in the U.S.

Mr. Magnussen, who keeps accurate cost records for every department, has found

Thermoid performance "highly satisfactory". "We can always figure on 30,000 miles per set of blocks on the front end, and 45,000 miles on the rear", says Mr. Magnussen, "and we have gotten as high as 45,000 miles on the front and 68,000 on the rear".

Safe, economical performance like this has led more and more of America's leading truckers to turn to Thermoid. Try Thermoid Brake Lining on one of your units—and let the results speak for themselves!

# Thermoid

CUSTOM-BUILT BRAKE LINING SETS - CBB SETS THERMO-BLOCKS FOR HEAVIEST DUTY

\* THERMOID COMPANY \* Trenton, l'ew Jersey \*

The K-1, ½-ton Internationals serve a good cause for Good Humor of Los Angeles. 22 of these units have been added to the fleet. Equipped with specially designed refrigeration compartments, cooling is provided by means of "freezing pads" which retain the cold for 25 hours. Pads are recharged every night at the company garage



# • REYCO • BRAKE DRUMS

# The Choice of the Largest Fleets in America

When it comes to dependability, economy and long wear, fleet operators, large and small, place their OK on REYCO Brake Drums. They appreciate the quality of REYCO METAL, a scientifically alloyed iron, highly resistant to heat, wear, scoring and distortion. They know from experience that brake linings last longer because of the smooth friction surfaces of REYCO Drums.



They know too that expansion under heat is so imperceptible that true dimensions are held at all times.

# Here are FIVE REASONS Why the Largest Fleets in America have Chosen REYCO

- No fade-out from expansion
- Elimination of destructive heat
- Maximum braking efficiency
- Maximum brake lining performance
- Maximum brake drum life

# MAIL COUPON TODAY

Your free copy of Catalog No. 22-D will be sent by return mail.

Reynolds Manufacturing Company
Springfield, Missouri
Gentlemen:
Please send me REYCO METAL Brake Drums Catalog and price list, No. 22-D.
Name
Street
City
State

### OCTANE TRUCK TESTS

(CONTINUED FROM PAGE 29)

duce the same performance as with the higher octane fuel if he is willing to sacrifice 10 per cent on economy.

5. Because of the power and economy loss as a result of changing from a 6.28 to 5.71 compression ratio we do not think the change to a lower compression ratio should be made.

6. The 74.5 octane fuel with the 5.7 compression ratio does not produce a significant increase in power and in view of even better than 74.5 octane fuels being available after the war when quite a bit of this equipment will still be running, again it would be wrong to reduce the compression ratio.

7. On the basis of an operation of 100,000 miles per year and with gasoline at a base price of 15 cents per gal., the use of 68-70 octane fuel would cost an operator approximately \$150 per year more than he is paying for 74.5 octane fuel per unit.

It is to be emphasized that if an operator does nothing to his units and allows violent detonation to occur, his operating costs are going to be increased by failures in head gaskets, pistons, valves, rings and bearings and cylinder wear will be accelerated, which will still further increase both fuel and oil consumption.

### END

(Please resume your reading on P. 30)

### **Army Testing Cast Iron Pistons**

In an effort to conserve aluminum, the Army Quartermaster Corps is now testing experimental vehicles equipped with cast iron pistons. The added weight caused by the substitution increases the load on the bearings and affects the power of the vehicle, which, the Quartermaster Corps says, may necessitate the re-designing of the motor.





# FACTS ABOUT WOLF'S HEAD 100% PENNSYLVANIA

Produced by a company with over 60 years' experience in refining Pennsylvania crude.

Chosen by leading fleets on a basis of careful cost records.

Renowned in aviation. Pan American Clippers have used Wolf's Head for over 13 years and more than 900 million passenger-miles. FIRST costs may count a lot in running a yacht or a pleasure car.

But when you're footing the bills for a fleet of commercial units, the only cost that cuts any ice is the maintenance cost per mile.

Maintenance men who know their stuff say that oil makes a whale of a difference in getting more miles per dollar. We'll prove it! We have positive evidence—specific records—that will show you without question how you'll be money ahead by using Wolf's Head Motor Oil and Lubes.

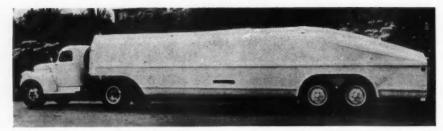
If you think all oils and lubes are alike, this evidence of ours will open your eyes. And today more than ever you've got to keep them open. The address to write to is Wolf's Head Oil Refining Co., Oil City, Pa., or New York, N. Y.

and and and a

WOLF'S HEAD
MOTOR OIL AND LUBES







Almost completely are welded, this streamlined auto carrier was built by the Dominion Truck & Equipment Co., Kitchener, Ont. Most of the trailer was plug welded with Hobart welders. Floors were constructed of 14 gage galvanized sheets and seams were welded with ½-in. bronze rods. Much weight was saved



# **QUIZ ANSWERS**

(Questions on Page 18)

- 1. a. Japan. Naturally these countries have given out no statistics since the outbreak of the war. However, at the beginning of World War II, the road mileages in these countries were as follows: Japan, 591,766 miles; Italy, 174,938; Germany, 263,267 miles.
- 2. c. According to figures given by the U. S. Dept. of Commerce, there were 15,644 trucks registered in the Philippine Islands as of Jan. 1, 1941. Of these, more than one-third were at Manila.
- 3. c. Sixty-five per cent of Japan's estimated 58,000 commercial trucks are American made. Less than 1 per cent of the trucks in Germany and Italy were made in U.S.
- 4. a. This shrub is a potential source of rubber should our supply from the Far East be cut off. Already a small amount of it is being processed by Intercontinental Rubber Co. and by American Cyanamid and Chemical Co.
- 5. c. "Camelback" is the name given to those humped strips of rubber used in the retreading process. Even the War Department has recommended the general adoption of retreading for all its own requirements, after Army tests showed that retreads gave 80 per cent of the service of a new tire at about 40 per cent of the cost and 40 per cent of the rubber consumption.
- 6. b. Goodrich. "Ameripol" is made from petroleum. It has several advantages even over natural rubber, such as resistance to deterioration by oils, high temperatures, and sunlight.
  - 7. The Japs would also like to know.
- 8. a. Ethyl fluid is made by combining metallic lead, alcohol, and chlorine with an aluminum catalyst. Anxiety over aluminum has already led Ethyl chemists to develop a substitute catalyst.
- 9. a. These are the famous little Army scout cars familiarly known as Jeeps, Peeps, Blitz-Buggies, or Leaping Lenas. The official name, though, is "½-ton, 4x4 truck."
- b. Bring on your worst terrain. These half-trucks, half-tractors will negotiate just about anything.

### **END**

(Please resume your reading on P. 20)



Fruehauf gave Fleming food for thought and apparently Fleming thought about trucking food in this Fruehauf trailer because here it is on the job. An added feature is the seascape painted on the trailer's sides



KEEP EQUIPMENT ON PAY LOAD PRODUCTION

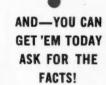
KEEP EQUIPMENT IN PERFECT CONDITION

SAVE MONEY AND BUY MORE BONDS

WE liver deliver today

# THE WIX FILTEREFILS THAT GIVE YOU THE <u>CLEAN OIL</u> FOR THIS DEFENSE PROGRAM—

Clean motor oil is a key factor in keeping a truck or passenger car—a tank or squad car ready and able. That's why today, when there can be no waste motion, WIX FILTEREFILS get the call. They're engineered to do a better job of filtration, and they've got the in-built guts to keep on doing it—LONGER! The fact that they cost less makes their choice unanimous, for their record in saving oil and equipment stands out in hundreds of fleet experiences across America.



TRADE MARK

ACCESSORIES CORPORATION, GASTONIA, N. C.

WAREHOUSES: NEW YORK • KANSAS CITY, MO. • FORT WORTH • MINNEAPOLIS • LOS ANGELES • SAN FRANCISCO CANADIAN DISTRIBUTORS: FYFE OIL FILTERS, LTD., 161 BAY STREET, TORONTO, CANADA

# DIESEL OPERATION

(CONTINUED FROM PAGE 33)

truck unless he has been approved to do so, even though it may mean delaying schedules. At the present time we have three men whose chief duty is to check and train new men and to ride with our drivers, explaining and demonstrating to them the way we want our trucks driven. We know that it has paid good dividends in reduced maintenance and fewer road failures. In our opinion, the most important of all driving rules from a maintenance standpoint is to keep the motor speed between 1500 and 1800 r.p.m. In order to make this possible, we select the speed at which we want the equipment to operate on level, open road and specify a tire size, rear axle ratio and transmismission ratio which will give us that top speed at 1800 r.p.m. We specify an adequate number of gears, evenly spaced, so that the motor speed can be kept within the required range.

Below 1500 combustion is not complete and the engine will foul up with fuel soot and sludge. If continued, stuck rings will result. After a few hundred miles of operation during which the engine has been pulled at low speed it will lose power and acceleration. This condition can be corrected in the next few hundred miles of operation by keeping the motor speed as near 1800 as possible to clean out the deposits resulting from improper combustion during the period of operation at lower speeds. We feel that diesel-powered trucks must be driven by tachometer for satisfactory operation. With the motor speed held within narrow limits. the road speed determines the gear to be used to keep the motor within those limits.

Running against the governor is harmful. It should not be permitted. A diesel engine can be used as a brake just as well as a gasoline engine. However, it is a characteristic of the engine we use to stretch conrods and crack pistons if permitted to exceed 1600 r.p.m. against compression. We have removed conrods stretched .009 at the journal and over .030 at the wrist pin eye. The same thing will occur if the engine runs away because of air in the fuel lines. Drivers are required to report such instances and the engines are pulled down immediately if it is known that such overspeeding has occurred. Failure to pull down the engine promptly may result in a conrod through the side of the block.

Proper throttling is extremely important. It is very harmful to give the engine more than it can use. In other words, if the r.p.m. cannot be increased by opening the throttle further, a good driver will slack off on the throttle to the point required to maintain his r.p.m. rather than open the throttle to put in fuel which cannot be burned and will result in more smoke and engine deposits with no increase in power or speed.

When starting a truck which has been standing for a number of hours, a good driver will pump up the fuel pressure with the hand pump before starting the engine in order to prevent scoring the discs in the fuel pump head. When starting the engine cold, the throttle should not be depressed. The engine should idle until it hits on all cylinders and the oil in

(TURN TO PAGE 88, PLEASE)



# KEEP 'EM ROLLING . . . ON THE HOME FRONT!

America's victory battle must be won at home as well as on the fighting fronts of the world. Civilian transportation faces a colossal job... our trucks will be hauling extra millions of tons. It's up to all of us in the service industries to "keep 'em rolling"... to keep them safe with better brakes—with brake linings by GRAFILD!

# WORLD BESTOS CORP., Paterson, New Jersey

ROLLS . SETS . SLABS . BLOCKS . CLUTCH FACINGS



(CONTINUED FROM PAGE 86)
the crankcase has had three or four minutes in which to warm up before the engine is put to work. This warm-up period gives the driver an opportunity to be sure there is nothing wrong with the engine before he leaves. Motor temperatures should be held at 160 deg. It should never be permitted to go below 140 deg. or above 180 deg. Because we do not use anti-freeze we cannot use by-pass thermostats. Most of our diesel-powered trucks have manually-oper-

ated curtains with which the driver controls the water temperature. In mountainous country this requires constant vigilance. Of course the oil pressure gage also requires frequent checking.

Our experience has shown that a motor with new rings, pistons, sleeves or bearings must not be pulled over three-quarter throttle in any gear for the first 500 miles. Failure to observe this rule will result in loss of power and high oil consumption in most

The supercharged diesel engine which we use must be kept turning free. If it is pulled down below 1700 r.p.m. with a full throttle, temperatures rise very rapidly. If this is continued for any distance failures are very likely to result. In this respect it is very much like an airplane engine which can be used at high output for a take off but cannot sustain that output for a long period without danger of a failure. Drivers operating trucks powered with these engines must be trained not to crowd the motor except for short periods such as picking up a higher gear, topping a hill or pulling a short steep pitch in a hill.



In the maintenance of the engine we feel the most important objective is to obtain a smooth even engine with good combustion. This requires considerable care with certain adjustments which control performance. One of the most important requirements is balanced sets of conrod and piston assemblies. The weight of these assemblies varies considerably. This results from replacement of conrods and pistons in service, breaking up the balanced set with which new engines are delivered. All of our conrod and piston assemblies are brought to our Portland shop where they are magnafluxed, reconditioned and weighed for assembly in balanced sets. Except for road failures, a complete set is always installed. Cup wiper clearance varies considerably. We have found that it must be held within very close limits to secure proper combustion. Washers of varying thickness are required to set this clearance properly. Use of two washers may result in road failure. Our experience has been that this is one of the most important clearances in the engine.

Injector timing is extremely important. As a result of our experience we also feel that valve timing is an extremely important factor. We are setting the start of injector travel at 44 deg. before top dead center. In order to obtain uniformity between cylinders in the same motor, we bore the injector and valve rocker arm bushings in a jig which controls the length from the center of the bushing.

Proper setting of the injectors and adjustment of the valves is essential (TURN TO PAGE 90, PLEASE)



feed without overcutting ... can be set to .00025" accuracy ... turns with any ½" drill...or hand-wrench... has no stones to sharpen, no extras, just 2 kinds of abrasive sheets that handle all work on all metals. Capacity 11/16" to 1½". Each hone packed in sturdy metal case with complete set of blades and abrasives.

For FREE demonstration see your

piston bosses, or both king-pin bushings in one operation... gives you fast hand

Speed Work Thru in '42!

Snap-on
The Choice Tools
of Better Mechanics

# SNAP-ON TOOLS

Snap-on salesman, or write . . .

26-B 28th Ave Kennehr Wiscon



(CONTINUED FROM PAGE 88) for satisfactory operation. As an example of this, a test run in September with 61,000 lb. gross was made after the engine had exceeded 2000 miles since adjustment of the valves and injectors. Oil temperature maximum was 210 deg. Water temperature maximum was 168 deg. Exhaust temperature at the flange reached a maximum of 1330 deg. On the following trip valves and injectors were properly adjusted but not other change was made. With

67,800 lb. gross the same driver on the same road, and virtually the same outside air temperature, the maximum oil temperature was 202 deg.; maximum water temperature 170 deg., and maximum exhaust flange temperature 1270 deg. With proper adjustment of the valves and injectors the engine will perform much more satisfactorily, will have more power and will be much smoother than if this adjustment is neglected.

The injector assemblies require

very little care. They are normally changed every 70,000 miles, usually requiring only cleaning and replace. ment of check valves and springs. The check valve clearance is extremely important as it can vary the amount of fuel to the cylinder if it is not set within the proper limits. Occasionally the holes in the injector tip or in the cup wiper become oblong and the parts must be replaced.

We set our fuel pumps at 32-CC for standard engines and at 40-CC for supercharged engines. Fuel lubrication of the pump seems preferable to engine lubrication, although we are using many of each type. In setting the fuel pump it is important that the output at 1600 and at 1800 rpm be the same. The output at 1200 rpm should be the same or slightly higher in order to obtain good acceleration. The fuel pumps give very little trouble. They are usually removed and overhauled every 70,000 miles. Trained, experienced men are required to work on them. We have built up test benches and have adopted methods which have virtually eliminated fuel pump failures.

Heads and valves are a more serious problem. Valve spring tension must be held within comparatively close limits. We have found it necessary to enlarge the lower end of the guide to prevent sticking of the exhaust valve when it is hot. If the stream from the injector touches the valve it will burn through it like a cutting torch. We have experienced considerable difficulty with exhaust valve seats going down into the head on the side next to the injector and the head of the valve following so that when the valve is removed the head is not at right angles with the stem. A part of this undoubtedly results from mineral deposits in the water jacket around the injector. We are now using treated water to overcome this part of the problem. Experiments with replaceable valve seats and better valves seem to be heading toward a solution of this problem.

At 35,000 miles we have found it necessary to drop the pan, check the conrod bearings and make a visual inspection of the conrods and pistons from below. This is necessary because of the comparatively frequent failures which we have experienced. On comparatively level runs it is not

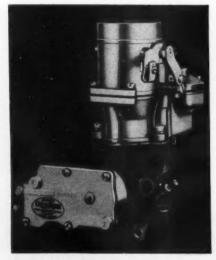
(TURN TO PAGE 92, PLEASE)

# A Double Check for WASTE and WEAR









CHECK, yes double check fuel waste and engine wear! Equip your trucks with the sensational new Zenith Gov-U-Retor. It's a simple, compact, efficient unit combining the famous Zenith Carburetor with governing action.

Install this single unit in place of unmatched units. The Zenith fuel metering system will check fuel waste. And engine wear will be checked by the built-in governor, which also checks cheating by throttle manipulation, reduces surging, provides even power flow, simplifies service.

Made in both downdraft and updraft types. Today, when fuel savings are vitally important and trucks must last longer, you need this new money-saving Zenith Gov-U-Retor on all your trucks. Get complete information now.

Write!

#### ZENITH CARBURETOR DIVISION

BENDIX AVIATION CORPORATION

696 HART AVENUE

DETROIT, MICHIGAN





#### FOR VICTORY

— Federal-Mogul's expanded factories are on 24-hour production of bearings and many other precision parts, for planes, tanks, guns, and propellers for motor torpedo boats, crash boats, mine sweepers, submarine tenders, dredges . . . and continue producing millions of bearings to service the automobiles carrying armament workers and materials to their jobs. We "keep 'em rolling'!

#### WAR ON WASTE!

BUY WISELY . . . AND DON'T WASTE WHAT YOU'VE GOT

## IT'S GOING TO BE A LONG HAUL!

# Don't Let Oil Pumping Rob You and the Nation of Vital Supplies

Smoky exhaust means oil pumping. Oil pumping robs you of gas, oil and power. It permits dangerous metal-tometal contacts inside the engine, soon demands replacement of metal parts.

(Every drop of gas and oil, and every metal part needlessly used up, is a waste of the nation's precious supplies, essential to keep our armed forces rolling towards victory.)

Oil pumping is caused by worn connecting rod bearings permitting excess oil to be thrown into the cylinders, burning and fouling the best of new piston rings and spark plugs with carbon. It also "starves" the engine bearings of needed lubrication, so that they rub on the crankshaft, soon collapse.

Avoid this needless waste. At the first sign of smoky exhaust, good maintenance practice calls for a complete and correct overhaul, to include replacement of worn engine bearings. Replace in sets with Federal-Mogul Oil-Control Bearings to restore power, pep and economical operation for the long run!

FEDERAL-MOGUL CORPORATION . DETROIT, MICHIGAN



(CONTINUED FROM PAGE 90) necessary to do this. Throughout our operation, however, we pull down every diesel engine at 70,000 miles regardless of apparent condition. At that mileage we change sleeves, conrod and piston assemblies, upper and lower rocker assemblies and, if necessary, the camshaft. At about 250,000 it is usually necessary to replace the crankshaft and timing gears. No. 1 main bearing gives some trouble but normally the main bearings require very little attention. We en-

countered considerable difficulty with excessive crankshaft wear, excessive wear on the bottom half of the main bearings and lack of lubrication at the upper end of the connecting rod on engines with copper-lead main bearings and an oiling system which brought the oil to the main bearings through the center of the bottom half. We changed back to cadmium-silver main bearings which require considerably less clearance and put the oil into the main bearings through the center of the upper half as on older

motors. When this was done our main bearing, crankshaft and wrist pin lubrication problems vanished.

Although we can obtain substantially longer life from copper-lead connecting rod bearings, we have discontinued replacing with them because of the effect on the crankshaft. When a copper-lead connecting rod bearing goes out it is almost always necessary to remove and regrind the crankshaft. Even in normal operation without failures crankshaft wear seems to be considerably greater.

Use of tension wrenches is particularly important. We use them for all conrod bolt nuts, main bearing stud nuts, cylinder head nuts and we are adopting them for the injector stud nuts. The magnaflux is used to check all connecting rods, pistons, sleeves and crankshafts which are removed.

The compounded lubricants have eliminated the majority of our lubrication problems. Stuck rings are rare if the engine is properly driven. We are beginning experiments to determine drain periods on the basis of active compounding material remaining in the oil.

#### **Problems That Remain**

There is a very great need for fuel improvement. We feel that a lower endpoint fuel would give us more complete combustion, less fuel soot and other solids in the oil and would considerably improve the operation of the engines. This is particularly true of West Coast fuel.

The blower on the supercharged engine still presents a very difficult problem. We believe that it should have a self-lubricating system which would permit use of a good clean oil to lubricate the blower bearings. We also feel that there is a need for some means of retiming the paddles. As the drive gears wear the paddles go out of time. As soon as they begin to touch each other and start picking up, the blower must be replaced. We can substantially increase the life of the blower if it can be made possible to retime it to compensate for drive gear wear.

The biggest problem in the supercharged engine is to bring crankcase temperatures into line. Early engines in our service had a manifold, exhaust pipe and muffler design which

(TURN TO PAGE 94, PLEASE)



#### **Designed for Present-Day Overloads**

Edwards Trailers have the ability to carry payloads beyond the limits ordinarily imposed in normal times. This helps you handle emergencies and haul more profit-earning freight per trip.

Yet Edwards Trailers stick to tried and proved principles of trailer engineering. This contributes to less maintenance and saves you money when repairs become necessary... means less time off the road, which in turn means less money lost from inactivity.

There are more than 20 features incorporated in Edwards Trailers, including straight-end type heavy duty springing, wide frames, and full width pick-up plate. They all combine to make an Edwards Trailer a money-maker on the road for you. Investigate.



Attractive proposition for qualified dealers. Write or wire.



\* It takes 114,000 gallons of gas to move an armored division 150 miles.

You can spot the victims of "Ripe Tomato Acceleration" easily — and frequently. They are the millions of trucks, buses and cars that smoke like chimneys...lack pick-up on the straight-away and power on the hills... and they burn twice as much oil as they should. Still worse, they waste millions of gallons of America's precious gasoline!

Figures show that these same gallons would drive an armored division of the U.S. Army 46 times across the country! You can help save this gasoline—and cut your own operating costs—by curing "Ripe Tomato Acceleration". And you can cure "Ripe Tomato Acceleration" by installing American Hammered Piston Rings. This is the line with the correct Commercial Engine Set for each engine condition—the only line with a POWER ring for the second groove. Koppers Company, American Hammered Piston Ring Division, Baltimore, Md.

FOR INCREASED POWER...DECREASED OIL CONSUMPTION...IMPROVED GAS MILEAGE, USE

# American Hammered Piston Rings

KOPPERS product

resulted in back pressure which reached a maximum of 4.4 in. of mercury. Since most of these engines are in cab-over-engine sixwheel trucks we designed and made a manifold which turned up a No. 6 port to carry the exhaust pipe up through the cab. This manifold increases in size from No. 1 to No. 6, reaching a 5-in. diameter at the flange. With this manifold, exhaust pipe and muffler assembly we have been able to hold back pressure to a

maximum of 6.6 in. of water. This has greatly reduced temperatures throughout the engine.

Crankcase temperatures, however, remain the chief problem in the engine. In November and December we made a number of tests to determine temperatures at various points in the crankcase. Five thermo couples were installed. With an oil temperature of 230 deg. in the center of the crankcase, temperature half way between the center and the wall was 215 deg., temperature near the pump

pickup 198 deg., and temperature at the rear of the crankcase near the wall was 180 deg. The oil entering the camshaft was 200 deg.

We are experimenting now with a special crankcase to route the oil through the cooler areas and to provide better circulation of air around the crankcase. We believe that the results of these experiments will be extremely interesting.

#### Discussion

H. L. Knudsen, chief engineer, Cummins Engine Co., in discussing Mr. Sneads paper said that he was not in agreement with the premise that the engines had to be kept operating between 1500 and 1800 r.p.m. Mr. Knudsen said that if it was necessary or satisfactory it was because the engines were adjusted for that speed. He pointed out that the best speed for fuel economy was 1000 r.p.m. to 1400 r.p.m. Mr. Knudsen also pointed out that the practice of adjusting the pump for more fuel gave a little more power at sea level but very poor economy.

Mr. Knudsen agreed completely that well trained drivers could reduce maintenance costs and engine deposits,

There just simply is no engineering explanation of rods stretching when the engine is driven by the vehicle if the speed is held down to safe limits. Mr. Knudsen admitted that he was puzzled by it since he had conducted experiments at those speeds on a dynamometer and had found no trace of rod stretch.

#### **END**

(Please resume your reading on P. 34)

#### Three-Dimension Film

Toledo Steel Products Co., Toledo, Ohio, has issued a sound slide film in full color and three dimensions. The film not only features the company's manufacturing story but marks a new step in industrial film technique.



A sweep of the brush is the effect achieved as a background for the name of the company operating this van truck. The 22-ft. body built by Gerstenslager Co., Worcester, Mass., is mounted on a model U20 Autocar.



FERODO AND ASBESTOS, INCORPORATED, NEW BRUNSWICK, N. J.

# for the HALF-TRACS



# WALKER leads in JACKS

#### TRANSPORT PLAN

(CONTINUED FROM PAGE 34)

formity with directions and policies of the coordinator. The coordinator shall have authority when absent from the area covered by this plan to designate a deputy coordinator to act for him and said deputy shall have all of the authority and duties of the coordinator during the period of such absence.

#### Personnel of Offices

3. The personnel of the dispatching office which shall receive compensation for their service shall be limited to a manager and necessary assistance. Membership in a dispatching office shall be open to all common and contract carriers by motor vehicle, having lawful operating authority in the area served by the dispatching office, and to all private motor vehicle operators in such area. Expenses necessary to the conduct of the dispatching offices shall be prorated among members thereof on a basis of the revenue-producing transportation services performed. The compensation of manager shall be fixed by the executive committee for that area.

4. The functions of the dispatching offices shall be as follows: (a) receive requests to transport military or naval property, supplies and equipment; (b) assign such

requests to the proper carrier or carriers with all necessary information regarding commodity, amount, points of pickup and delivery, and all other pertinent information; and (c) supervise generally the billings for such services so that they may conform to the requirements of the military or naval department or office for which service was performed.

#### **Dispatching Offices**

5. The dispatching offices shall provide for the following classes of services: (a) normal flow of military and naval supplies and equipment; (b) emergency demands to move large consignments of supplies or equipment, and (c) maintenance, as nearly as possible, of normal commercial service.

6. The dispatching offices, in their relations and transactions with shippers shall not assume or accept any responsibility whatsoever beyond arranging for the transportation and services requested by mili-

tary or naval authorities.

7. The manager shall have a thorough knowledge of the motor transport industry within the area embraced by the office, shall be a competent executive able to cooperate with others and have the confidence of the industry. The manager shall devote his full time to the duties of the dispatching office to the exclusion of other transportation or organization activities. When in the judgment of the executive committee, however, the volume of business of the office justifies only part time services, the other activities of the manager and staff shall be subject to the approval of the executive committee and authorized in writing.

The duties of the manager shall be: Active management of the office; contact with military or naval authorities as to operating matters, in accordance with policies prescribed by the coordinator; give advance advice to regulatory authorities regarding unusual vehicle movements; assist carriers in the handling of problems of emergency nature: arrange for providing necessary dispatchers and equipment to take care of military and naval traffic and services; aid carriers to augment their supply of equipment when necessary; maintain records of equipment available in the area covered by the office as to type, ownership, availability, etc.; secure necessary information and act as intermediary in arranging for the furnishing of available equipment to carriers when their own equipment is insufficient to handle traffic tendered to them; equitably apportion and assign tonnage among the various operating members of the dispatching office in accordance with their operating authority. the equipment available, and the urgency of the movement; make necessary arrangements so that needed equipment may be promptly mobilized to meet extraordinary requests for convoy movements, and make necessary arrangements with regulatory authorities for the movement of such convoys; maintain necessary records; make such reports as are requested by the coordinator, the executive committee and the regional committee; provide for the prompt receipt of requests for service by







(CONTINUED FROM PAGE 98)

military or other governmental authorities and the prompt assignment of such requests to carriers; arrange for prompt return of vehicles upon completion of specific duty.

#### **Executive Committee**

8. There shall be established in each dispatching office area an executive committee consisting of five members as follows: One common carrier, one contract carrier, one bus operator, one private motor vehicle operator, and one representative of the office of civilian defense. The respective members of the executive com-

mittee shall be selected by the coordinator from a list of nominees submitted by the regional committee and by the branch of the industry involved. The executive committee shall be responsible for the formation of plans of operation (other than the determination of the necessity for operations under the provisions of paragraph 10), the execution of the policies laid down by the coordinator and regional committee, and supervision of the affairs of the dispatching office. They shall advise with and consult with the regional committee; also with the coordinator when requested to do so.

9. In addition to such duties as have already been or will be delegated to them,

the regional committees, or subcommittees thereof, shall advise and consult with the coordinator as requested by him in the formation of general policies and plans of operation and shall supervise the affairs and activities of the executive committees in their respective regions. They shall be charged with the duty of promulgating equitable forms of equipment leases including regulations for their application.

10. If, in arranging for the transportation and services requested by military or naval authorities, it is frequently determined by any office that no carrier has lawful operating authority to conduct the requested transportation or perform necessary services and is willing and able to do so, the office involved shall make necessary arrangements and promptly apply for required temporary authority from appropriate regulatory authorities to operate as a carrier during the emergency. If and when such authority is granted to an office it shall thereafter, but only during the emergency, perform the duties of a carrier in instances where no carrier has lawful authority to conduct the reque ted transportation of service and is willing and able to do so. In conducting the business of a carrier so established, the office and its manager shall be subject to the continuing direction and supervision of the executive committee provided for in paragraph eight. The coordinator shall have sole authority to determine when and to what extent the frequency of such requests justifies arrangements and application as provided for in this paragraph.

#### END

(Please resume your reading on P. 35)

#### More Pay, Vacations Granted Drivers

The National Defense Mediation Board has awarded increases of 4/10 cents per mile and 10 cents an hour and a 6-day vacation with pay to approximately 50,000 over-the-road drivers in 12 midwestern states. The award is retroactive to November 16, the expiration date a contract between the International Brotherhood of Teamsters (AFL) and central state employers. The new agreement is for two years, to expire November 15, 1943, unless extended by agreement.



As a testimonial to the fact that arc welding has placed its stamp on the industrial life of its country, the Union of South Africa has issued this special postage stamp depicting a welder using modern equipment in his work. Stamps are printed in English and Afrikaans. Value is 6d (12 cents)

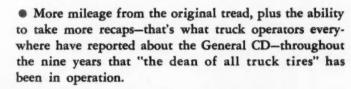


37-46 Northern Blvd. Long Island City, N. Y.

## When You Buy a GENERAL C. D.

#### IT'S LIKE GETTING

# 1 CERTIFICATES

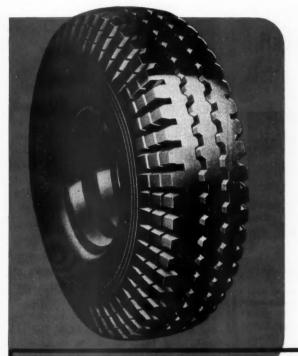


YOU ARE ISSUED

Now this famous tire-redesigned in 1941 to give even greater service-is regarded in a new way by operators throughout the country. When they obtain a certificate permitting the purchase of a new tire, they know that by getting a General CD they make that certificate produce at least half again as much, in terms of the continued operation of their trucks.

Your General Tire dealer can show you why the CD has been the greatest mileage tire of them all for nine years . . . its exclusive construction . . . every ply a full beadto-bead ply. When you buy your next new tire, select from his stock the General CD that he recommends for your specific operation.

THE GENERAL TIRE & RUBBER CO. AKRON, OHIO



In the past 3 years General Tire's Factory-Control Kraft System Tire Renewing has been tried and proved by 2800 truck operators, with from 5 to 400 vehicles each . . . who will testify that it has very materially increased their tire mileage under all types of load and driving conditions. Kraft Renewing is available only at your General Tire dealer's shop. Only Kraft Renewing adds new treads to worn tires under these factory controls:

- Factory-Approved Equipment
   Factory-Trained Men
- Factory-Specified Methods
   Factory-Laboratory Control

COPYRIGHT 1942, THE GENERAL TIRE & RUBBER CO., AKRON,



#### LAUNDRY SHRINKS 6-DAY WEEK TO 5

(CONTINUED FROM PAGE 35)

have equipped them with trucks having twice the usual body space on one-half and one-ton chassis. We began changing to this type of equipment coincident with the change to the 5-day delivery week, but it was also the result of the need for high bodies to permit hanging dry cleaned garments without folding or dragging

on the floor, the need for longer bodies to accommodate room-size rugs rolled, and the need for adequate loadspace to justify long trips without a relay or a second trip. Second trips and relays are taboo except on routes within five miles of the plant.

Our theory in experimenting with double capacity light trucks was to enable salesmen to save enough time in loading, working the load, driving, turning and parking, to enable them to spend more time in selling. Our salesmen operating these newtype units report that they save from one to two hours a day and it accounts for more of an improvement in sell. ing time than you may realize. For instance, on a route on which the salesman could formerly spend four hours in actual contact with customers and prospects, the added selling time represents an increase of 25 per cent, and in some cases more than 40 per cent increase. On routes where the salesman formerly had no time to devote to soliciting new customers, he now has at least an hour a day that he can and does devote to seeking new business.

I said that you never make up your loss of business from old customers in changing to a five-day week, but by thus finding more time for the salesman to devote to actual selling. we succeeded in offsetting it, and in actually increasing our volume. Obviously, if we operated these vehicles on a six-day basis instead of five days there would be that much more benefit. Obviously, too, if we operated our plant at full capacity for six days, with the volume evenly maintained, it would be more profitable than five days, but we must face facts and conditions as they are today and recognize the trend and be able to adjust ourselves to it. This is especially so in our case, because we are in a territory that has been hurt rather than helped by the defense program, and our gain in volume is the result of our sales effort.

We have a new loading platform that can accommodate 11 trucks at one time, and if it were necessary, we could even load all 14 trucks at once, but the major part of the time saved in loading and unloading is due to the fact that the bodies of the new units are man-high, 70 in. wide and have a 91/2 ft. loadspace behind the driver's seat, yet the wheelbase is only 113 in. for both our 1/2 and one-ton chassis, except for one unit which has a wheel-base of only 102 in., and a loadspace 73/4 ft. long, the height and width, however, being the same as the 91/2 units. If it were not for the extra loadspace, we would need more trucks to handle our volume.

We did not appreciate the full significance of the extra loadspace at first. The illustration shows a conventional panel truck with 141 cu. ft.

(TURN TO PAGE 104, PLEASE)



V CHECK THESE NEW FEATURES

AN ENGINEERED RIDE—aot "just a seat!" Ten rubber torsion bearings act as shock absorbers . . brakes heavy recoil! Saves kidneys! No neck jolts!

BACK AND SEAT MOVE TOGETHER on welded one-piece frame! Rugged truck-life construction! No rub'n' scrub . . saves wear and tear on upholstery and clothing . . eliminates costly seat repairs and replacements!

MOVING PARTS IN RUBBER washes out bumps and ripples of corduroy roads! Squeakless without a drop of oil!

NEW CONNECTING ROD EQUALIZER provides "controlled suspension"... prevents horizontal sway and wobble... Entire mechanism now enclosed!

BODY SURFACE PRESSURES given maximum distribution by marshall spring cushion unit decked with rubberized curled hair!

CONTRIBUTES TO NATIONAL VICTORY. Saves materials and manpower! All-out War will mean total effort . . longer hours on the road. Keep drivers alert for safety, careful of vital transport equipment, fit for more per day road miles!

THE RIDE TELLS THE STORY!

NEWS! By arrangement with the Hickman Pneumatic Seat Company, Eden, New York, HICKMAN Full-Floating TRUCK SEATS are now made and sold by BOSTROM of Milwaukee—as licensed under A. F. Hickman patents. With years of experience in seat construction, Bostrom is fully qualified for expert manufacture of Hickman-engineered seating units. And the new enclosed, improved Hickman model is ready now! Study the features summed up at the left . . . and write for further details. Better still, order a trial seat and judge it in action!

Attractively Priced! Order Direct . . . Today!

Only \$17.85 . . . plus Federal tax . . . adjustment attachment—75¢ extra. MODEL B—FITS ANY STANDARD CAB. MODEL B-1 FITS STANDARD C.O.E. CABS. Prompt delivery! Order direct from BOSTROM. (Price f.o.b. Milwaukee, Wisconsin . . . subject to change.)

100% GUARANTEE: You must be fully satisfied. Try this improved Hickman seat. If not satisfactory, return to factory within 10 days and your money will be refunded immediately.

BOSTROM MANUFACTURING COMPANY
134 East Washington St. MILWAUKEE, WIS.



Defense materials and parts must be trucked to keep Industry's wheels turning. Guns, troops and supplies must move swiftly to threatened points.

Snow-blocked highways that stop our motor transportation and bog down our motorized Army units, are costly "detours" on America's road to victory.

Clear the way with WALTER SNOW FIGHT-ERS! Put the tremendous power and traction of Walter 4-Point Positive Drive on the job. Get your highways open faster-clear more miles per truck-plow through the highest drifts with irresistible force.

Walter 4-Point Positive Drive provides FOUR powerful driving wheels, with torque autoto its traction at any instant, providing a steady, unfailing source of power.

From radiator to rear light, WALTER SNOW FIGHTERS are designed and constructed to withstand the punishing work of snow removal. Write for detailed literature explaining the features that make this unusual performance possible.

#### WALTER MOTOR TRUCK CO.

RIDGEWOOD, QUEENS, L. I.



# WALTER 4-POINT POSITIVE DRIVE SNOW FIGHTERS

(CONTINUED FROM PAGE 102)

of loadspace on 125-in. wheelbase compared with one of our extra capacity trucks with 280 cu. ft. of loadspace on 113-in. wheelbase (we use this body on both one-half and one-ton chassis). All our bodies are stock units. The big body costs us only \$4.47 per cu. ft. of loadspace on a ½-ton chassis and \$4.92 on a one-ton chassis, compared with \$6.14 per cu. ft. of loadspace for the 141 cu. ft. conventional panel ½-ton unit. These

are delivered costs, including freight, taxes, extras, accessories—everything except special paint and lettering which we have done locally. Therefore, in first cost, the double capacity unit is 19 per cent cheaper per cubic foot of loadspace on the one-ton chassis and 27 per cent cheaper per cubic foot on the ½-ton chassis than the half-ton conventional panel body unit.

When license plates at 80 cents a hundred pounds are considered on the basis of loadspace, there is a saving of about 40 per cent per cu. ft. of loadspace for plates for the extra capacity units.

We average better than 13 miles to the gallon of gasoline with our double capacity trucks (which not only carry more but make more stops) and we get about 16 miles to the gallon with the ½-ton conventional panel units with only half the loadspace. Therefore, our cost for gasoline on the cubic foot of loadspace basis is 34 per cent less per cubic foot for the double capacity body units.

In garaging, the 102 and 113-in. wheelbases of the extra capacity trucks require less floor space than the 125-in. conventional panel, but when garaging is figured on payload space, these extra capacity units figure out about 50 per cent less per cubic foot of payload space.

In the same way, insurance costs, chassis repairs, body repairs and even tire costs all show savings per cubic foot of loadspace with the double capacity units. As for painting, including lettering, we pay \$40 for the 141 cu. ft. conventional panel and \$45 for a 280 cu. ft. body, and on a cubic foot basis, that means about 40 per cent less for the oversize bodies.

Since the payload that can be carried is related to the cubic capacity of the body, especially in the case of light, bulky loads, you may naturally ask: Can salesmen use that much extra loadspace? Our experience is that there is an immediate gain resulting from the time saved in loading, unloading, working the load and driving (the shorter wheelbase enables the men to get through traffic, park and turn in less time). When the time saved is devoted to soliciting new business, an immediate gain in payload results.

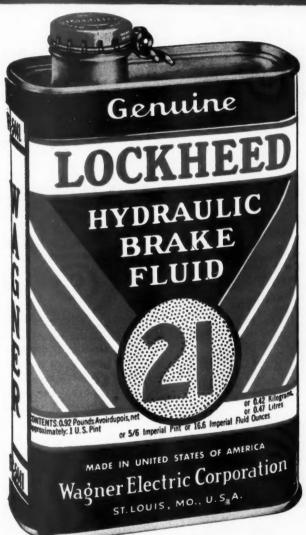
The secondary gain comes from broadening our sales horizon. For the first time, we have been able to go all out in our service, our advertising and our sales promotion. Our advertising agency works very closely with us and our plans and advertising are adjusted to the changes of policy as they occur. We can handle in these oversize bodies types of work that it would be difficult to handle in conventional panel units, be it overstuffed furniture, very large rugs or

(TURN TO PAGE 106, PLEASE)



You gain these advantages when you standardize on

# WAGNER LOCKHEED HYDRAULIC BRAKE FLUID





- 1. One mixture for all seasons... Reduces inventory.
- 2. One mixture for all cars and trucks...Reduces inventory.
- 3. Assures year-round operating performance.
- 4. Functions in sub-zero temperatures.
- 5. Amply lubricates the system over the operating range of temperature.
- 6. Maintains chemical characteristics after long use.
- 7. Maintains its high operating temperature characteristics.
- 8. Mixes with other approved fluids.
- 9. A proven product... Used by car manufacturers.
- 10. Nationally advertised . . . Has consumer acceptance.
- 11. Warehoused throughout the United States and Canada at 25 Wagner branches.
- 12. Packaged in six sizes of containers: 3-oz., pint, quart, 1-gallon, 5-gallon, and 50-gallon drums.
- 13. A product of Wagner Electric Corporation, manufacturers of Lockheed Hydraulic Brakes.
- 14. Available everywhere through leading jobbers.

How to Blend and Robil
HYDRAULIC
BRAKE SYSTEMS

AZ CATALOG IN-122
Level to the Comment of the Co

draperies, and we can put more pressure on the complete family bundle and the conversion of wet wash customers into finished work customers. The extra loadspace acts as a spur to our selling efforts now that we have the height, width and length of loadspace to take the limit off.

While our use of the loadspace varies with the season, we usually start these new units out three-quarters loaded, which enables us to keep the wet wash separated from the finished work and provides working space to get at the load and to pick up bundles of soiled laundry right from the start.

We are sometimes asked whether we collected and delivered on the same trip when we used conventional panel trucks only. No, it would have been too unhandy with our volume per route, especially with so much wet wash to accommodate.

Like most operators, we used to

think that as soon as a route reached a certain volume, it should be split up into two routes with some extra effort and the assistance of the route supervisor. We thought it was better to pay for operating two trucks than one under such conditions. Now, we are better off because the salesmen earn more money, but we save money by handling more volume without operating more trucks and by collecting and delivering on the same trip.

As for the weight of loads, the normal laundry payload is light and bulky and dry cleaning is even lighter. It is possible to fill one of our double capacity trucks and find that the load weight is only 700 to 800 lbs. Even a load in which wet wash predominates seldom weighs more than 1,000 lbs. Therefore, ours is not a weight problem but one of sufficient workspace in height, width and length to permit quick loading, the arranging of bundles according to location, accessibility without bending over and to get in and out easily with arms filled with bundles because of the low floor level and the low entrance step. The saving of both time and energy is important to selling, because a man who is rushed or fatigued is in no mood to go from door to door soliciting new business or to suggest to old customers services we might perform for them as a means of building volume

Our salesmen finish fresher despite the fact that they now do more volume, and are more contented and enter into the spirit of our sales promotion campaigns instead of having to be pushed all the time.

Should the increasing tempo of the war and armament program lead to a man power shortage to the extent that will necessitate the use of women "salesmen," the greater ease of working the load and driving these new units may prove another blessing, for after all, women should be able to do a good job of selling things that the housewives buy if they can sell as well as they buy.

Our fleet consists of 14 trucks. Of the six conventional panel units, four are ½-tonners and two are ¾-ton. Of the eight double capacity units with Metro bodies, five are on 1-ton chassis and three are on ½-ton chassis



END

(Please resume your reading on p. 36)



# HE CARRIES COVERALLS IN HIS BRIEF CASE

Since its inception, the Bendix-Westinghouse Company was forced to make a decision . . . should it attempt to make technical men of salesmen or train technical men to serve in a sales capacity. The wisdom in accepting the latter choice has now been thoroughly proved \* Today's Bendix-Westinghouse representative may well be looked upon as an authority on braking and Air Control. He knows his business because he's learned it the hard way. And he's still just as much at home under a vehicle as he is in an

engineering or maintenance conference \* You may place implicit faith in this individual representative of Bendix-Westinghouse who is sincerely proud to serve you. He is an indispensible cog in the very vital machinery of our concentrated war effort. In this he is entirely typical of the entire Bendix-Westinghouse Organization whose every last individual dedicates himself to the task of assuring more safety, efficiency and economy from each vehicle of the nation's vast transportation system, as a whole.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE CO

ELYRIA, OHIO



ARE DEVOTED TO YOUR CONVENIENCE AND SAFETY

#### MAYFLOWER MAINTENANCE

(CONTINUED FROM PAGE 38)

if they do not fit the valve stem after they have been pressed into the head it is because we have distorted them in installing them in the head. When pressing in the guides we watch the gage on our hydraulic press very closely. If it takes more than two tons pressure to press the guide in place we remove it and ream out the head. Then when the guide can be pressed into place with two tons pressure the guide always fits the valve stem with the correct clearance.

For piston rings we normally use conventional rings. However, we sometimes encounter a condition, especially when doing an overhaul in the frame, where the cylinders have about .008 in. taper and it seems a shame to rebore or resleeve especially when we are not doing a

complete overhaul job. Still .008 in. is quite a lot of taper for a conventional ring. To get the rest of the mileage out of the cylinders when we are approaching complete overhaul on all parts of the engine we use expander type rings. We think they serve their purpose very well but their life is comparatively short. They usually seem to be good for about 25,000 miles in our service. When this amount of service is indicated as a governing factor in how long the partial overhaul is to last, we find this type of ring very useful.

Piston pins are fitted by honing.

While the engine is being overhauled the electrical units and fuel pump are getting a full shop treatment. We have growlers, armature lathes, a power jig for running a generator while taking the electrical specifications as laid down by the manufacturer. This same equipment will give the torque reading of a starter. Next to the aforementioned equipment is a distributor fixture which makes it possible to rebuild a distributor and duplicate conditions found in actual operation.

In the fuel pump work we have found that if we take a section of the crankshaft that has the pump cam on it and mount it so that it can be turned by a crank we get a more accurate idea of the vacuum and pressure created by the pump than if we manipulated the operating lever by hand or by a fixture that might not duplicate the cam stroke.

When the engine is ready we draw from the screened shelves over the work bench of each department the accessories that are to be used and these are mounted on the engine. When completely assembled the engine is put on a running-in stand with piped city water and an exhaust pipe through the roof. It is given an 8 hour run-in. Even though we have made all possible adjustments to the engine and accessories on the bench we now try to find flaws with portable test equipment and if we find them we adjust over again. Remember the accessories go with the engine. They are not a part of the run-in stand.

When the engine leaves the shop in a truck it is right and so are all the accessories. Of this this we are sure. Once on the road it will be

(TURN TO PAGE 110, PLEASE)



The watchword of fleet owners today is "Keep 'em Rolling." Their all-out efforts for Defense can't allow for costly service repairs, and long waits for new parts. Instant repair service must be available and repairs must be made to last. The best method of making fast, strong repairs is welding and the best welders to make these repairs is Marquette.

#### MARQUETTE A.C.ARC WELDER

... are built to operate simply and effectively with the minimum of operating effort and the maximum of operating effectiveness. Durability is assured. There are no moving parts to wear out. Each unit is readily mobile for quick moves to any part of your repair shop.



BUY THE BEST . . . BUY MARQUETTE

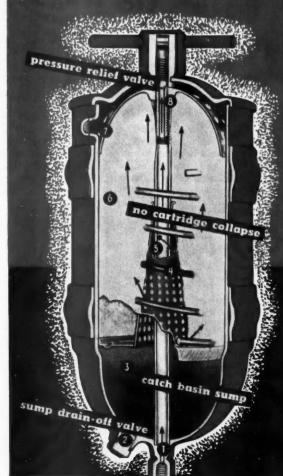
MINNEAPOLIS, MINNESOTA

Vital to Victory Conservation of Oil and Engines Because

# Cleansed Oil Prevents Bearing Failures Like This:



THIS is an actual photograph of a common type of bearing failure. According to Federal-Mogul engineers, this bearing failure was due to a lubrication failure such as is caused by a sludge emulsion of dust, grit, carbon, etc., or a sludge-clogged oil supply line. Among the other causes of of bearing failure are the pitting of bearing surfaces by hard carbon particles, the imbedding of metallic particles in bearing lining, and corrosion from harmful acids in the lubricant.



Siudge, emulsions, metal and carbon particles, which can be so destructive to bearings and engine parts, cannot exist in oil that is being continually cleansed by a DeLuxe Oil Pilter. DeLuxe does more than strain oil . . . more than filter oil . . . it actually cleanses oil. And DeLuxe does a better job of oil cleansing, because only DeLuxe has all eight construction features essential to oil cleansing. It is DeLuxe's superiority in oil cleansing which has led to its use by 80% of all filter equipped fleets and its leadership in the Diesel and industrial fields. For complete information write DeLuxe Products Corporation 1406 Lake Street, LaPorte, Indiana. Canadian address, 364-70 Richmond St., W., Toronto, Ontario, Canada.

# DELUXE

Does More Than Strain Oil . . . More Than Filter Oil

(CONTINUED FROM PAGE 108)
necessary to operate on many kinds
of gasoline and oil because of the
nature of our business. This we
cannot control and it may be that
the mixing of oils and fuels does
penalize us some on engine life. We
keep the oil clean by having the oil
and the filter cartridge changed every
5,000 miles. The truck carries three
filter cartridges with it.

With our trucks away so much our tires have to be more reliable than those of most fleets. We have found that under the conditions of our operation we can use retreaded tires to greatest advantage in the winter months. Using them during the cold season only we find that we get as many miles from retreads as we do from new tires.

Brakes are just as important to us as tires. When a truck gets into the shop we go over the braking system thoroughly whether any work is indicated or not. We can turn brake drums in our shops without removing tires from the wheels. We check all lines for leaks and we have developed a tool which slips into the axle tube to make sure that the backing plate is straight.

All of our van bodies are built in our Indianapolis shop. We build them to the same specifications and because of this uniformity we know what we have to do to them in the event of damage. This makes it possible for us to maintain the bodies without loss of time when they need attention. We do all of our own painting at Indianapolis and this work is supplemented by touch-up work at Irvington.

Our present maintenance program was developed during the last 10 years when the more normal procedure was one of caution and retrenchment. Then perhaps even more than now economy was of more significance than it is today. However, the savings effected are just as worth while today as they were before.

The achievement of "keeping them rolling" is even more important to us today for obvious reasons. As we look back on this development we see it as a preparedness program which during the crisis of increasing shortages and rationing of vital materials for national defense is of almost incalculable value in the maintenance of our moving service without interruptions.

#### END

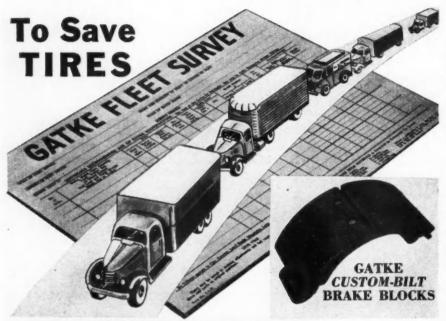
(Please resume your reading on P. 40)

#### Trucks Must Have Chains

The Connecticut state highway department has issued an order requiring all trucks using that state's roads to be equipped with chains in bad weather. Police will order all tractor-trailers without such equipment off the roads.



This high-waisted looking truck is a Marmon-Herrington conversion of a  $1\frac{1}{2}$ -ton Ford specially designed for use in the Bolivian interior where footpaths are the only roads. Equipment on this 4x4 consists of a heavy-duty winch, air compressor, 9.00/20 standard tires and 13.50/24 duals as extras



# THE PROVEN METHOD of SELECTING BRAKE LINING

Tire shortage makes correct brake lining doubly important now. Grabby, ill-balanced brakes grind away the rubber.

GATKE Custom-Bilt Brake Blocks and the GATKE System of Brake Lining Selection give you TOPS in dependable brakes and tire saving efficiency—

Correct holding power for balanced action . . . smooth, but positive stopping without grabbing . . . dependable braking at all service temperatures . . . no loss of friction on long grades . . . prolonged service with fewer adjustments.

This wonderful performance results from superior qualities of

GATKE Brake Blocks, selected for the job on the basis of long experience.

Hundreds of fleets — large and small — operating every kind of vehicle under all kinds of conditions have improved brake performance and increased tire mileage, eliminated grabby and noisy brakes and reduced maintenance expense by using the modern GATKE System.

What's more, the Extra Performance of GATKE Brake Blocks costs you nothing extra.

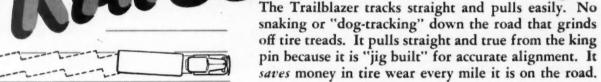
Why not get all the facts before you decide. Just ask your GATKE Jobber or write us.

GATKE CORPORATION
228 N. La Salle St. Chicago, III.

# 



# TRAILMOBILE PLAZER!



Get the facts of these important features — and many more of them that lead to tire and fuel economies

with the new Trailmobile Trailblazer. Just call up the nearest Trailmobile office or send for a copy of the Trailblazer book. Write today. It is yours without obligation.





\* This self-adjusting, load-matic spring action soaks up the jolts — gives with every smashing blow that would damage the tire carcass. It's a tire saver, a load lightener — and designed to reduce danger of road sway and side slipping.



\* Wheels and axles are in line — always — on every kind of road — because that radius rod is directly in line with the center line of the axle. Tires cannot shift out of line with every bump or chuck hole in the road.



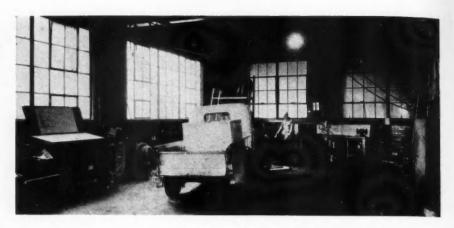
THE TRAILER COMPANY OF AMERICA, CINCINNATI, OHIO

#### CLOVERLEAF DAIRY

(CONTINUED FROM PAGE 31)

is done out in the garage. Every mechanic has a portable tool cabinet, the lubricators and the air compressor are on casters and the crew has long since decided it is easier to take equipment to the trucks out in the garage than it is to jockey trucks in and out of the repair shop.

Batteries are checked and filled once a week regardless of the mileage



Showing the well-lighted interior at the rear of the Cloverleaf garage



NO ACCIDENTAL UNCOUPLING!

PLAY SAFE - SPECIFY THE:

ASSIGN STEEL FOUNDRIES
EAST CHICAGO ... INDIANA

inspection and tires are inflated at the same time. There is not much checking of tires, other than the inflation pressure done by this fleet because the outside retreader who does the recapping and repairing work is continuously checking to see if any tire needs his attention. As soon as a tire is bald it is removed and a tire to replace it is loaned for the day it takes to recap it. The results of this recapping are 80 per cent of new tire mileage at about onethird the cost of a new tire. Some tires get recapped three times. Trucks do not carry spares.

Mr. Duncan wishes that other men who brag about tire mileage would tell him how they do it. On the multi-stop retail routes he is able to get about 12,000 miles before recapping and that does not check favorably with some figures that other fleet operators in similar operations have talked about. He buys good standard tires and treats them well so he cannot understand some of the more optimistic reports that make the rounds.

At the 10,000-mile inspection spark plugs, condensers, contact points and distributor caps are replaced. Fuel pumps are checked both on the compression and vacuum side and if there is any doubt about their condition they are replaced with a rebuilt unit. Starters, generators and voltage regulators likewise are checked at 10,000 miles and replaced if a test shows they are not up to par. The replaced units are sent out for rebuilding. Mr. Duncan has been able to work a deal that makes it cheaper to do it that way.

(TURN TO PAGE 114, PLEASE)



HIGH PRESSURE

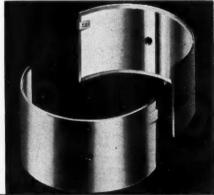
A PROBLEM IN

MODERN ENGINES, TOO!

There's one sure way to overcome the problem of today's high bearing pressures. Ring-True "Aviation" Type copper alloy bearings are the answer. They've been designed for modern aircraft engines—are used by the majority of Diesel and heavyduty gas engine manufacturers. They are indispensable to the operators of heavyduty trucks and busses.

To solve the problem of today's high bearing pressures, insist upon *Genuine* Ring-True Bearings.

Genuine RING-TRUE BEARINGS



ALWAYS REPLACE BEARINGS IN SETS



Complete Motor Bearing and Connecting Rod Service

CLAWSON & BALS, INC., Chicago

Acctory Stocks in Principal Cities

#### (CONTINUED FROM PAGE 112)

Oil consumption seems to be the real guide for determining when an engine should be overhauled despite the fact that engines are checked for compression on the routine inspection. If they show a variation between cylinders Mr. Duncan is made aware of it and he decides if the engine should be pulled down. He says that he would be inclined to overhaul an engine, or at lest investigate its internal condition, should any cylinder drop 10 lb. of compression. This happens so seldom that he is forced to say that oil consumption is the real guide.

In rebuilding an engine this fleet bores cylinders at 0.010 taper and up to that point removes the ridge and reassembles with conventional piston rings. For the most part valve reconditioning is done only when the engine is overhauled. Average engine overhaul periods are 40-50,000 miles which sounds good for door-to-door operation.

There has never been a sludge problem around this fleet and it seems remarkable considering the climate and the type of operation. Mr. Duncan says he is at a loss to understand why he has escaped the plague. He takes no precautions beyond changing oil at 4000 miles and filter cartridges at the same time, covering his radiators in cold weather and generally good maintenance. He uses only one make of oil, which he says is a 100 per cent Pennsylvania oil, varying in viscosity from 30 in summer to 20 in winter.

On the fuel side he is not quite so happy. For business reasons it is necessary to spread the gasoline business over several sources. He just about gets his carburetors adjusted to one type of fuel and then he finds he has tanks full of another type. It does not worry him to any extent, but he feels that he could do a little better than his average of 6 m.p.g. on retail trucks and 8 m.p.g. on wholesale trucks if he could only stay put on a fuel source.

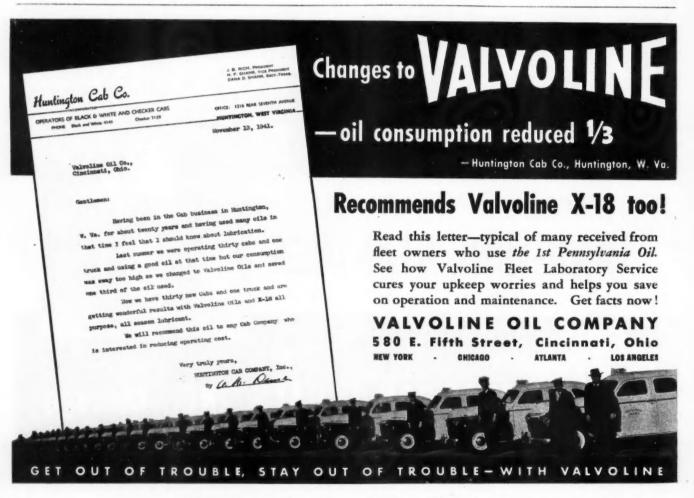
Ordinary touch-up work is done in the shop since Mr. Duncan or any one of his mechanics can handle a spray gun. They do not attempt to refinish complete trucks because they do not have the time or space. The refinishing is farmed out.

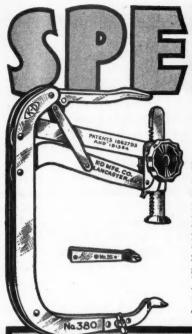
There is a stock of parts and rebuilt units in cabinets along the shop walls that totals several hundred dollars, but no one could accuse Mr. Duncan of hoarding parts. Gasket sets were hung on hooks high above the cabinets. With a small trustworthy crew there is no formal stock keeping system. When parts are used the mechanic records it on the work card and tells Mr. Duncan when the supply is getting low.

With skid chain weather just around the corner we asked Mr. Duncan how he handled this detail. He pointed to a skid chain repair bench which is equipped with a pedaloperated tool for either spreading or cutting links. Chains are taken in stride with this equipment.

Truck operating costs seem to be very good everything considered so we may assume that the boss is happy about the fleet. If Mr. Duncan has any secret sorrows about his job he did not confide them and if you want to know how the crew feels we can tell you that the man they call "the new man" has been there five years.

(Please resume your reading on P. 32)





#### The K-D 380 COMPRESSOR

A dependable Valve Spring Compressor, strongly built for hard service and fast as lightning for one man operation. Services nearly all L-head and valve-inhead motors, old and new. Great for general shop use. See it at your lobber's.

Two sets of jaws furnished, Straight and Offset, as shown.

This is just one of the K-D TOOLS... "the hustlers for your toolbox." There are hand Lifters, special Tools for Ford motors, Ignition Point Tools, Piston Ring Tools and many others shown in the new K-D Catalog. Write today for your copy.

K-D MANUFACTURING CO.

Lancaster, Pa. and Hamilton, Ont.

#### 50 KINGBEE STYLES Meet Every Rear View Need



PAN-O-RAMIC BUS MIRROR

—added protection through wider range of vision—fully adjustable— clear or non glare glass.

#### NO. 214 PROTECTO RUBBER RIM MIRROR

- Heavy duty type - full universal-rust proof, water universal—rust proof, water proof—extendible—recom-mended where extra rigid mounting is required.





#### NO. 209 RUBBER RIM BUS MIRROR

—maximum protection for glass—simple and speedy glass replacement when necessary— right and left hand styles.

#### NO. 218UV PROTECTO RUBBER RIM MIRROR

-Mounts direct to body or to any size hinge—extendible and adjustable—up and down—forward and back--forward and



#### WRITE FOR CATALOG

AMERICAN AUTOMATIC DEVICES CO.

#### **WONDER WELD STOPPED THE LEAK!**



Miller Manutacturing Company
Camden, N. J.
I was racing this past season with the WONDER WELD recing the season with the WONDER with the season with the WONDER well of the season with the wonder of the season with the wonder of the season with the work of the season with the season wit

MILLER MANUFACTURING CO. 1100 N. 32nd Street, Camden, N. J.

#### HONY SuperHYDRAULIC COMPLETE LINE IN FROM-ONE DESIGN



Anthony offers you the hoist with every desirable mechanical feature built into each of 9 super hoist sizes. Whether you buy a 1½ yard or a 20 yard dump body you get each and every Anthony Super Hydraulic Hoist feature. Here is the line of hoists specially constructed for profitable dump truck operation.

FASTER OPERATION -LONGER LIFE BECAUSE OF THESE FEATURES "Push-Pull" dash control



Line drawing shows location of "Rubber Restraining Blocks"

#### Double Arm "Power-Speed" lift "Low Mounting Height"

Special "Rubber Restraining Blocks"

"Telescopic" hoist frame

• "Floating Gear," Pump, Etc.

Write Today for Complete Sales Manual

ANTHONY COMPANY, INC., STREATOR, ILLINOIS



#### **Operating Costs in the Last** Six Months are *Unbelievably* Low!

Six months after they tackled the job of keeping their motors free of harmful sludge deposits, the Garage Superintendent of a large dairy fleet reported that as a result of consistent use of

#### MAGNUS METAFFIN

his operating costs for the past six months had been "unbelievably low."

Of course, they should be, for when you keep sludge from forming in the motor, you keep lubrication at top effectiveness; insure proper cooling at the 'hot spots' and cut maintenance, due to sludge-clogging, way down in the cellar. And because you have eliminated sludge, sticky valves and rings, you also will get better performance from your motors.

ASK ABOUT OUR 30-DAY TRIAL OFFER ON METAFFIN

#### MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants.

38 South Avenue

FLEET

**OPERATORS** 

CLEANING

HANDBOOK

GET YOUR COPY of this fleet cleaning manual. Write Te-day!

Garwood, N. I.

For Busy Men With Busy Fleets! FOUNTAIN BRUSH Cuts Time and Work in Halk



#### Saves the Finish — Does a Better Job!

The Speed-Wash fountain brush is made of 100 per cent jet black horsehair. Tufts are hand-drawn into a sturdy block with rust-proof wire. They cannot come out or come loose. Eight evenly spaced jets provide a steady stream of clean, fresh water through the brush. These tufts are always clean—free from grit. A durable rubber bumper around the brush also prevents scratching. Handle is 4 6 ft. light-weight tube fitted with standard hose coupling.

Adding a Speed-Wash brush is like hiring another man-without pay.

Speed-Wash cuts wash jobs between 40 to 60 per cent. It soaks, scrubs and rinses in ONE operation. The ease with which it works allows the Speed-Wash to be a man-sized tool, cleaning a 12" or even wider path with each stroke.

USERS THROUGHOUT THE COUNTRY - GUARANTEED TO SATISFY YOU! The Speed-Wash Fountain Brush has been proved under many varied conditions. List of constant users reads like "Who's Who in Transportation." It is sold on the unconditional guarantee, your money refunded if you return brush within 10 days.

Order today—Send check or money order to—
MILWAUKEE DUSTLESS BRUSH CO.

526 N. 22nd Street

Milwaukee, Wisconsin

#### TRANSMISSIONS

(CONTINUED FROM PAGE 30)

With the experience gained from military production behind them the transmission and clutch makers will be ready and anxious to provide automatic shifting without clutch operation by the driver.

In substantiation of this prediction it might be pointed out that one large clutch and transmission manufacturer developed a friction clutch that would give about 10 times the life of clutches such as are used today. He did this by what now appears to be the simple expedient of drawing the air that goes into the carburetor through the clutch. An air cleaner was placed over the intake and the air went through it into the clutch and then through another air cleaner and then into the carburetor. Just to prevent any claims about interference with volumetric efficiency of the engine the clutch plate was rigged with blades that gave it a slight blower action. This provided a slight supercharger action giving just a trifle over atmospheric pressure.

By cooling the clutch the effect of friction was kept at a minimum. This increased life of the clutch made it seem like a real contribution to automotive design and the company provided samples to several manufacturers of heavy duty vehicles for them to try. But before any orders could be placed the developer and potential manufacturer of this clutch recalled all samples for the simple reason that by the time he would be able to make any of them, the friction clutch would be out of date.

The automatic transmission will have to bring some advantages to earn its place in trucks. It cannot rest alone on convenience to the driver since the drivers of trucks are paid to drive and there is no inclination to worry too much if the driver has to "inconvenience" himself to the extent of shifting gears. Fortunately there are a number of advantages that the automatic transmission can bring to trucks.

1. The first one is shifting. Not as a matter of convenience but as a matter of eliminating the process entirely as a driver operation because even with modern transmission the job is not done too well by the average driver of heavy duty trucks. Im-



GO TO LIGHTING HEADQUARTERS YOUR K-D LAMP JOBBER

\* \* \*



\* \* \*

#### OSHKOSH

4 Wheel Drive Trucks

A proven product. 1½ to 10 ton capacity. Write for complete information.

#### OSHKOSH

Motor Trucks, Inc. Oshkosh, Wis.

TAPERED ROLLER BEARINGS

Tyson

ROLLER BEARING CORP.
MASSILLON, OHIO

Brace Engineering Co., Inc. 547 SOUTH BELMONT INDIANAPOLIS, IND.

CONSULTING DESIGNING AND OPERATING ENGINEERS
LUBRICATION OIL FILTRATION
OIL RECLAMATION

AUSTIN

THE ACCEPTED STANDARD . . .



A complete line of LANDING GEARS - - - HORIZONTAL, VERTICAL and FOLDING TYPES.

Write for complete information on "SAFETY PROPS" and FIFTH WHEELS.

RUSTING
TRAILER EQUIPMENT COMPANY MUSKEGON MICHIGAN

perfect shifting results in maintenance costs that can be eliminated.

2. The purchaser can forget all about selecting transmission gear ratios for his particular operation, which many times he cannot get anyhow, because with a hydraulic converter the number of reductions is infinite and in operation the correct one for conditions is automatically selected.

3. Shock loading is eliminated. This will probably permit the use of lighter drive-lines and rear axles and certainly it will reduce maintenance on these parts and engines as well.

4. Racing the engine either through carelessness or to ease the shifting burden will be impossible, thus reducing engine maintenance.

5. It will be impossible for the driver to lug the engine at low speed by having the truck in the wrong gear. The engine will start at full torque and stay there.

6. The automatic transmission will be lighter than the wobble-stick transmission, not heavier as commonly supposed. An automatic transmission with an input capacity of 275 lb. ft. torque weighs 290 lb. while its counterpart with the shifting controls weighs 312 lb. This weight ratio is due to improve. With the increase in aluminum production due to the emergency, probably all transmissions in the future will be made with aluminum cases since the price of aluminum should be low enough to permit it.

There is a strong temptation to add fuel economy to this list rather than place it at a disadvantage. It is true that the gear transmission is more efficient than the hydraulic torque converter when there is a reduction. The gear transmissions in intermediate speeds will average around 96-97 per cent efficiency while the hydraulic converter has a peak efficiency of about 86 per cent and a low of 0. The 0 is, of course, the efficiency at idling speed. However the automatic transmission of the future appears to be a combination hydraulic and gear device and whenever there is need for a reduction larger than 21/2 to 1 the operation will be in hydraulic drive. The rest of its time the drive will be through gears, either intermediate or direct.

This eliminates any loss in effi-(TURN TO NEXT PAGE, PLEASE)

# WGB OIL CLAROFIERS For Heavy-Duty Economy

MACK DIAMOND T TWIN COACH AUTOCAR BROCKWAY KOEHRING



Large public, contract and private fleets specify W.G.B. Clarofiers. Leading manufacturers use W.G.B. as original equipment. They demand the strength, simplicity, and low upkeep of W.G.B. equipment for heavy service. Keep your oil amber-clear for thousands of miles. Operate your engines 50% longer between overhauls. Replace your cartridges cheaper, less often and without tools. Investigate W.G.B. at once.

Write for this helpful new book. It's free.



WGB
OIL CLARIFIER, INC.
KINGSTON, N. Y.





#### gives a complete record of the work of a truck

Enables you to check up on each truck after every day's run. Tells if rerouting is necessary, etc. Inexpensive. Entirely self-contained. No connections of any kind.

HANS SATTLER Sheboygan, Wisconsin



Builders of fine Motor Trucks, Tractors, Trailers and Buses since 1910.

Capacities from 1½ to 10 tons.

Write for bulletin

AVAILABLE TRUCK COMPANY

2501 Elston Ave.

Chicago, Illinois



Pat. No. 1,433,560

All sizes of

MONKEY LINKS

FREE SAMPLE

FLEET OWNERS. State number of trucks in fleet and size of chains.

FLOWER CITY SPECIALTY CO.

Rochester, N. Y., or Your Jobber (CONTINUED FROM PAGE 141)

ciency most of the time and the fact that an automatic selection of an infinite number of reducing ratios will be so much better than a driver's judgment that the final result will be on the favorable side for the automatic transmission.

The automatic transmission will not be all of a single pattern. There are different ideas in this device as there are in all other designs. There are the proponents of the full automatic transmission, which takes all shifting and selection away from the driver, and there are those who favor letting the driver select reductions by a simple movement of the foot which releases the accelerator momentarily.

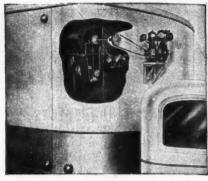
The transmission which operates at the driver's command can shift faster than the driver can take his foot off the accelerator pedal and put it back.

The transmissions themselves are due to improve. The military production is all tried and proved stuff. The manufacturers feel that now is no time to experiment on material going into emergency service. They have some developments that need a little more work. When it is feasible these developments will be brought along and incorporated into commercial design.

Some of the appurtenances looked upon as standard with the automatic transmission may disappear as they grow more efficient. Among these may be the fluid cooler.

Maintenance of the automatic transmission will be no more complicated than that of the present transmission. Engineers appear to have made up their minds that simplicity is necessary if they are to succeed. They expect much less maintenance and much more satisfactory service.

The controversial nature of the foregoing is brought out by the viewpoint of another group which, while believing that a change is coming, especially in heavy-duty trucks, feels



# RELIABLE REFRIGERATION ... at lowest first cost, lowest operating cost

The D & G Spray Type Refrigerating Unit uses reliable ice and salt, has clutch release for easy starting, direct cooling by brine spray, no coils or fins to defrost, bronze fitted pump and hosts of other features that contribute to its reliability and freedom from maintenance expense. Write us for full facts.

#### DROMGOLD and GLENN

1419 McCormick Bldg.

Chicago, III.

## Oldforge FINE



Oldforge Screw Extractors or Backous Punches are hammer forged from fine alloy With or without left hand twist.

Write for catalog of complete line of automotive and aircraft tools.

QUALITY TOOLS CORP. New Wilmington, Pa.

that the change will be along the lines of a combination of hydraulics and gearings. This group points to the experience with fluid flywheels in trucks, some of which worked out exceptionally well while others did not justify the increased cost and weight.

Asked to comment upon the discussion dealing with elimination of the wobble-stick, this group argued as follows:

The foregoing discussion does not, in our opinion, give sufficient consideration to the wide differences in the



functions of transmissions used in passenger cars, busses, tanks and

Fundamentally, a transmission is nothing but a set of ratios. In a passenger car the major function of these ratios is to allow the desired acceleration. In a heavy-duty truck the transmission ratios become, in effect, in combination with the axle. a series of axle ratios to provide the truck with the various ability factors required to meet varying conditions of operation.

It is apparent then that to do its job satisfactorily the transmission must provide a range of ability factors sufficient to take care of the worst operating conditions and the highest road speed required. But this is not all. In addition the ratios must be so arranged as to meet the largest possible number of different operating conditions.

As we see it where the necessary overall range of the transmission is relatively small and where acceleration is the major function the torque converter with its entirely automatic response to driving conditions offers enough advantages, particularly in ease of operation, to more than offset the loss in efficiency. Where the overall range required is large and where the major function of the transmission is to provide in effect a series of axle ratios-in other words, where it is not a question of going from the maximum ratio to the minimum as fast as torque requirements will permit, but rather of using the proper ratio to meet a given operating condition over an extended period of time-then the efficiency of the geared transmission and its almost limitless overall range are advantageous enough to compensate for the limited number of ratios available.

Owing to the difference in the functions of passenger car transmissions and truck transmissions, as previously described, an automatic or semi-automatic transmission which mets the requirements of passenger cars or perhaps even of buses may be entirely unsuitable for trucks, simply because in varying types of service the necessity of employing any given ratio is not always a function of torque and speed requirements to which such devices are necessarily responsive.

(TURN TO NEXT PAGE, PLEASE)



# How to clean greasy floors and lube pits without hard scrubbing

Help National Defense by eliminating waste, conserving materials and equipment, saving time, effort, money wherever possible! For example, to clean greasy floors and lube pits without long, hard scrubbing, use SAFE, fast-working OAKITE PENETRANT.

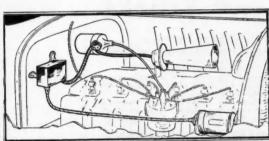
As so many fleet maintenance men will tell you, its vigorous penetrating action thoroughly, quickly softens and loosens grease, oil and dirt, so that tough deposits are removed easily. A short soak . . . a light brushing and a rinse . . . and the job is done, with floors and pits restored to clean, spic-and-span condition! NEW, FREE 36-page booklet gives complete story on this many-purpose, money-saving material. Write for your copy today!

OAKITE PRODUCTS, INC., 26D Thames Street, NEW YORK, N. Y.
Representatives in All Principal Cities of the United States and Canada



# Harness that Engine . . . with SAFETY SPEED MOTOR CONTROL

Technically speaking, every engine is harnessed to perform some specific duty but, too often, its power and efficiency are wasted by improper operation. SAFETY SPEED MOTOR CONTROL, driven by the generator, accurately regulates the RPM on large truck units, curbing any tendency toward low gear overwind.



For example, with the SAFETY SPEED MOTOR CONTROL set for a maximum of 2600 RPM, the engine operates normally, with no restriction of power, from the cranking speed to 2590 RPM. Then, at 2600 RPM the SAFETY SPEED MOTOR CONTROL cuts in to reduce the RPM to a point below the set maximum. Note the fact that at no time until the maximum has been reached does the control affect the power or efficiency of the engine.

The average installation time on most units is less than one hour.

Write for complete information on SAFETY SPEED VEHICLE
CONTROL for light trucks and delivery units.

SAFETY SPEED CONTROL COMPANY 4242 W. Chicago Avenue CHICAGO, ILL.



ICC Safety Regulations require means for preventing or removing ice or fro t from windshields. Equip your trucks XOW with these practical, efficient "clear vision" accessories:



Fulton Electric Sleet-Frost Shield.

r from your jobber, or write us direct if he cannot supply you. Order

FULTON THE Dept. CJ-2

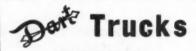
COMPANY Milwaukee, Wis.

#### JONES PORTABLE TACHOMETER



The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y., Shell Petroleum Co., Atlantic Refining Company, Tidewater Company, Keeshin Motor Express, ex Trucks, Brockway, U. S. Navy. Direct, instantaneous reading The world's largest operators of com-

JONES-MOTROLA-STAMFORD, CONN. 432 FAIRFIELD AVENUE



HEAVY DUTY FOR OFF THE HIGHWAY SERVICE

— Specially Designed for —
Coal Mining—Iron Ore Mining—Copper
Mining—Pit and Quarry—Logging—Oil
Fields—Etc.
It Costs No More for Trucks Specially
Built to Fit Your Needs. Have Our Engineers Visit and Analyze Your Operation.

DART TRUCK COMPANY KANSAS CITY, MO.



(CONTINUED FROM PAGE 143)

A truck on which a rotary snow plow is mounted is a good example. The speed at which the truck should be driven is dependent on the speed at which the plow can handle the Designing a transmission snow. which would automatically shift to the proper ratio for any conceivable truck requirements ranks in the class of perpetual motion inventions. This does not mean to imply that for a given type of operation where a limited number of conditions are imposed automatic transmissions cannot satisfactorily be employed. Obviously it is not commercially practical to design a different transmission for each different type of operation or to limit the work which a truck can do by unnecessary mechanical limitations in such a transmis-

A geared transmission functions equally well in plain or in mountainous country. The same cannot be said of a torque converter.

In the initial discussion the following statement is made:

"However, the automatic transmission of the future appears to be a combination hydraulic and gear device and whenever there is need for a reduction larger than 21/2 to 1 the operation will be in hydraulic drive. The rest of its time the drive will be through gears, either intermediate or direct. This eliminates any loss in efficiency most of the time and the fact that an automatic selection of an infinite number of reducing ratios will be so much better than a driver's judgment that the final result will be on the favorable side for the automatic transmission."

What would happen to such a unit on some of the long grades on the west coast?

Another statement is as follows:

"The automatic transmission will not be all of a single pattern. There are different ideas in this device as there are in all other designs. There are the proponents of the full automatic transmission, which takes all shifting and selection away from the driver, and there are those who favo: letting the driver select reductions by a simple movement of the foot which releases the accelerator momentarily. The transmission which operates at the driver's command can shift faster than the driver can take his foot off

## VALLEY SUPERDUTY CHARGER

#### Meets 1942 Conditions

Eliminate Run Down Batteries for Lose Coat Battery Mileage. The new, improved, Valley-Guaranteed (two years) charger connects to the lighting circuit . is easy and economical to operate . no moving parts. Now it is easy and inexpensive to obtain long battery life by maintaining efficient battery charge, Model SG-12 charges 1 to 12 6 voit batteries.

NOW ONLY \$28.00



VALLEY ELECTRIC CORP. 4221 Forest Park Blvd., St. Louis, Mo.

For a Smooth, Safe Ride at Lower Cost, use

#### E-AIR

Hydrau-Matic Shock Eliminators



The Cleveland Pneumatic Tool Co. Cleveland, Ohio



Both "V" TYPE and ONE WAY BLADE TYPE

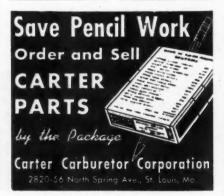
hand or power hydraulic control FOR ALL MOTOR TRUCKS FROM 1½ to 10 TONS

Write for catalon 338C and 388C with discount to truck dealers CARL H. FRINK, Mfr., CLAYTON, 1000 Isl., N. Y DAVENPORT-BESLER CORP., DAVENPORT, IOWA FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT

#### Tune In "WAR REPORTERS"

An outstanding commentator reports on the war week every Saturday, 5:45 P. M., E.S.T. Red Network, N. B. C.

Sponsored by LIBBEY-OWENS-FORD SAFETY PLATE GLASS 1154-A





WHEN YOU NEED

#### TRACTION

YOU NEED THORNTON

THORNTON TANDEM CO. DETROIT, MICH.

Manufacturers of THORNTON four rear wheel DRIVE and THORNTON Auto-matic Locking Differential.

#### /ITAL

- Low Mileage Costs
- Easy Operation
- Maintained Schedules

BALL AND ROLLER BEARINGS



the accelerator pedal and put it back."

Does the driver always want to change ratios when he momentarily releases the accelerator?

There is much to be said for the clutch and the wobble-stick that give a driver complete control of his truck at all times and under any conceivable set of conditions.

While taking full advantage of the benefits which may be derived from hydraulic drives and from automatic devices, engineers must guard against the tendency to consider them a panacea.

#### END

(Please resume your reading on P. 31)

#### Handbook on Castings

A complete handbook on Meehanite castings has just been published by the Meehanite Research Institute of America, Inc., 311 Ross Street, Pittsburgh. The book contains 47 pages of information for engineers, designers, machinery manufacturers, etc.

Although a nominal price of \$1.00 has been established for the Meehanite Handbook, copies will be sent free to men of industry who can use the data it contains.



These Lindsay Structure trailer bodies built by Colonial Body Corp., of Long Island City, N. Y., were designed by Norman Bel Geddes for the Ringling Bros. circus. They support 20-ft. lighted structures marking the entrance to the greatest show on earth. On the highway the signs fold back and the trailer does double duty toting poles, cables and equipment

# PLASTIC MOULDING

## MOTOR TRUCK **BODIES**

#### **6 REASONS**

for using

#### PLASTIC BODY MOULDINGS

- SAVES LABOR SAVES WEIGHT BETTER WATER
- RESISTANT QUALITIES

- BETTER APPEARANCE PAINT GRIPS MORE FIRMLY
- 6 IT'S TOUGHER

IMMEDIATE DELIVERY WRITE FOR INFORMATION

ERLINDER-PLATT SALES CORP. 4007-31 S. WABASH AVE. CHICAGO, ILLINOIS



POWER

#### BATTERIES

built for REPLACEMENT SERVICE GLOBE-UNION INC., MILWAUKEE, WIS.

#### **OVERSIZE REAR WHEEL** STUDS

for all TRUCKS

Order





CHAMP-ITEMS, Inc. 5191 Maple Av. St. Louis, Mo.

#### MOTOR TRUCKS BUILT TO "PERFORM BETTER LONGER"

Conservation of critical materials is the keynote of defense. When your business demands new motor trucks you can aid in the conservation of defense materials by purchasing Sterling durable motor trucks. They are longer lived and require fewer parts for maintenance after rendering thou- STERLING MOTORS CORPORATION, MILWAUKEE, WIS. sands of miles of dependable service.



Branches and Distributors in Principal Cities.



#### "DANDUX"



#### CANVAS **PRODUCTS**

"In these days of America's supreme effort of self-defense, we pause to renew our pledge of leadership in the design, use of quality material and precision craftsmanship-for all industries, using Dandux Canvas Products."

#### C. R. DANIELS, INC. 101 Crosby St., New York, N. Y.

Newark, Boston, Chicago, Gleveland, Detroit, Alberton, Md., Pittsburgh, Philadelphia, Buffale, Hartford. Milwaukee





#### Here's How You

Can Reduce Your

Turn Signal Costs . . .

Specify

#### TELEOPTIC

(one year guaranty)

Signals

THE TELEOPTIC CO. Racine, Wis.

## **BIG ENOUGH**

• This is space enough to tell you that Fitzgerald Bulldog Gaskets are best for modern heavy duty service.

THE FITZGERALD MFG. CO., TORRINGTON, CONN.

# FITZGER



#### NEWSCAST

(CONTINUED FROM PAGE 44)

#### ATA Brake School Starts Its Schedule

The American Trucking Associations, Inc., on January 26 inaugurated a series of brake schools for truck mechanics at central points throughout the United States.

The first of the schools was held January 26 in Richmond, Va. Other dates and cities

Raleigh, N. C., January 27; Jacksonville, January 29; Charlotte, N. C., January 30 (tentative); Chicago, January 30; Kansas City, Mo., February 2; Springfield, Mo., February 3; St. Louis, February 4 and 5.

The following tentative dates also have been set: Buffalo, February 9; Syracuse or Albany, February 10; New York, February 11; New Jersey, February 12; and Boston, February 13.

Schools also will be conducted, sometime between February 2 and 6 in Ohio and Pennsylvania.

Scheduled for the latter part of February or early March are classes in Houston. Dallas, Milwaukee or Madison, Minneapolis, Billings, Mont., Salt Lake City, Pocatello, Ida., Portland, Ore., San Francisco, Los Angeles, and Phoenix, Ariz.

The schools, which require a minimum of 25 students, will be conducted under the joint sponsorship of ATA and its affiliated association in the state. Instructors will be staff members of the Safety and Operations Section of ATA in Washington,

The lectures, illustrations, charts and text for the one-day course have been prepared by ATA in cooperation with leading brake manufacturers and the SAE.

After instruction in the fundamentals of brakes, the students will be told how to locate brake troubles and how to correct them. The operation of each type of brake system-mechanical, hydraulic, vacuum or air-will be explained in detail. Troubleshooting methods for each system will be fully covered and preventive maintenance practices for the various types will be outlined.

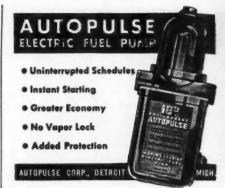
The truck mechanics attending the schools will be furnished with troubleshooting charts for the various systems, as well as the complete text of the lectures and illustrations in book form.

The classes will be concluded with an open discussion. The answers to technical questions and problems requiring submission to the manufacturers will be mailed to the students at a later date.

The course is open to any truck fleet or truck trade mechanic.

#### Carriers Seek Rate Rise

Motor carriers are seeking an increase in freight rates comparable to those proposed by railroads. Cited as a reason for their demand before the ICC were higher material and operating costs. Chester G. Moore, secretary of the American Trucking Associations, Inc., claimed that 214 class one common carriers showed 20 per cent higher operating costs.



THE Decalcomania that is . .

#### FIRST in

APPEARANCE **ECONOMY** DURABILITY

#### Permalux "KOLORFILM"

PERMALUX "KOLORFILM" decale offer greater durability and economy in application and maintenance. Completely synchrosous with modern truck finish. they last lenger. . . look better!

IT'S MADE OF DUPONT "DULUX"
Write TODAY for details.

THE PERMALUX COMPANY

#### -More Profits per Job with HEIL



#### **Bodies and Hoists**

Safe — dependable — complete line for all types of service. Ask for free catalog.

#### THE HIELLIL CO.

Milwaukee, Wisconsin Hillside, New Jersey Holats — Bodies — Tanks — Boad Serapers — Snow Plows Bottle Washers — Dobydrators — Oil Burners — Water Systems

#### HAUNTED by brake problems?

HERE'S A FRIENDLY TIPI Send for the facts on the J-M Brake Advisory Service . . . find out how you can get rid of any such problems with -M Brake Materials. Johns-Manville, 22 East 40th Street, New York, N. Y.

#### Oregon Breaks Bottleneck

The Oregon Highway Commission has authorized, for the duration of the war. a gross truck weight limit of 68,000 lb. and a maximum length of 60 ft. when at least 50 per cent of the load consists of defense goods. Present limits are 50 ft. and 54,000 lb. and remain unchanged for non-defense transportation. The order intends to include all goods shipped to industries engaged in manufacture of military equipment. The order also obviates unloading and loading at state lines.



#### PREPARED

to help you get more work from your Trailers!

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER CO.

Sales and Service in Principal Cities

# Meehanite Heavy Duty BRAKE DRUMS

Longer life for brake linings . EXTRA strength for sudden stops . Mirror-finished and distortion-proof.

Developed by MEEHANITE RESEARCH INSTITUTE Pittsburgh. Pa. in cooperation with GENERAL FOUNDRY & MANUFAC-TURING CO., Flint. Mich.

Write for copy of

Brake Drum Materials."

#### TRUCKSTELL INC., CLEVELAND

CONVERTERS of Ford and Chevrolet Trucks for Extra Heavy or Special Services.

DISTRIBUTORS of Tested and Approved Truck Equipment.



#### Kentucky May Show Way in Liberalizing Highway Barriers

Preliminary reports from the seven states which are holding regular legislative sessions during 1942 indicate that the national war effort has thrown the spotlight upon bottlenecks in the nation's highway transportation system and that the elimination of these bottlenecks will be one of the first problems tackled by these legislatures as they convene.

Kentucky, known as the nation's worst bottleneck, will almost certainly increase its restrictive size and weight limits. The state now permits a vehicle length of only 26½ ft. and a gross weight of 18,000 lb. Governor Johnson's message to the Kentucky Legislature, when it convened last month, urged speedy enactment of a measure to correct this bottleneck. The legislation being considered will raise the state's gross weight limit on trucks to 28,000 lb. and increase the length limit on single unit trucks to 33 ft.

Reports from South Carolina and Louisiana indicate that discriminatory truck fees also may be corrected, while their legislatures are in session, and in both Mississippi and Virginia there is sentiment for reciprocity laws to permit freer operation of motor vehicles over state lines.

Highway organizations have recommended that the motor vehicle laws of Pennsylvania, New Jersey, Massachusetts, New Hampshire and Delaware be amended to permit a length for single vehicles of at least 35 ft. For Delaware, Pennsylvania, and Vermont truck weight liberalization is recommended. Vermont is be ag urged to amend its aw to permit trucks to be 12½ ft. high, six inches higher than the present law allows.

#### ICC May Get Sweeping War Powers Over Trucks

A bill has recently been introduced in the Senate proposing to give the Interstate Commerce Commission emergency powers over motor carriers equaling its powers over railroads. It would authorize the ICC to require joint use of equipment, terminals and other facilities; to modify, change, suspend, etc., licenses and regulations, grant powers of requisition, etc. The bill would empower the ICC to take action without hearings or notice and has the backing of Attorney General Biddle.

#### Ramsey Buys Canadian Plant

The Ramsey Accessories Mfg. Corp. of St. Louis, Mo., has purchased the facilities of the Superior Piston Ring Co. of Canada, Ltd., Windsor, Ontario, and in the future will operate in Canada under the name of The Ramsey Accessories Mfg. Corp. of Canada, Ltd. Work is already under way to equip this plant with the most modern equipment obtainable.

#### Rogers Heads Transport Division

John L. Rogers, Interstate Commerce Commissioner, has been appointed as head of the Division of Motor Transport, an agency of the Defense Transportation Bureau now headed by Joseph Eastman.

(TURN TO PAGE 148, PLEASE)



## TARDY ROUTEMEN LOSE CUSTOMERS! It's easier to keep

old customers than get new ones. Late deliveries "burn up" retailers. Keep supply lines open with Baker Plows. "V," reversible and one-way blade types. Readily mounted on any truck, Built to take it.

Thousands in use by dairies, bakeries, newspapers, bus companies and others. Send for Bulletin 829.

THE BAKER MFG. CO.
Oldest and Largest Mfrs. of Snow Plows
571 Stanford Ave., Springfield, littnois



#### B.F. GOODRICH Silvertown TRUCK TIRES

Best in the Long Run

Made by

B. F. Goodrich





Runaway trucks are dangerous and disastrous. AUTOMATIC BRAKE CONTROL gives you safe parking because it holds on all wheels by using your regular hydraulic brakes. Over eight times the braking surface of standard emergency. It's Safe, Saves Repairs, lessens strain on drive shaft, starts smoothly, brakes quicker.

Ask your dealer for demonstration or write

#### AUTOMATIC BRAKE CONTROL CO.

## LOWER YOUR FILTER MAINTENANCE COSTS

**MICHIANA** 

OIL FILTERS

Write for Bulletin 839
MICHIANA PRODUCTS
CORPORATION

Michigan City, Ind.



#### SEAT CUSHIONS MUST SERVE LONGER



During these conserving days extra quality, extra ruggedness and extra service are needed! Karpex Black Diamond all-rubber seat cushions and back rests give you all three—without any upkeep expense. You'll find they're quality-built from special processed semi-sponge rubber with diamond grid construction to deliver thousands of extra miles of comfortable low cost riding. Right in every feature and made to fit any truck. Send. seet specifications for prices.

#### KARPEX MANUFACTURING CO.

1424 E. 19th Street, Indianapolis, Ind.



GATE

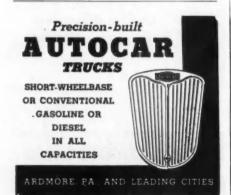
(CLOSED - OPEN)



Heavy galvanized wire suspended from rings which slide on a round track. "Chain Link" weave as is used in best quality fence. Protects against theft and loss. Easy to open and close. Weave collapses within itself, saving space. Rigidly made for long, hard service, yet it is so light in total weight that average gate weighs only 90 lbs. Rasily installed by owner's men. Satisfaction guaranteed. Quantity Discounts—Distributors Wanted.

#### ATLAS FENCE COMPANY

Richmond St. & Castor Ave., Philadelphia



(CONTINUED FROM PAGE 147)

#### Miley Acquires Union Asbestos

The L. J. Miley Co., Chicago manufacturer of brake linings, brake shoes and brake products, announces the acquisition of the Brake Lining Division of the Union Asbestos and Rubber Co., Cicero, Ill. All orders for Union brake linings are now filled by the Miley Co.



Joseph C. Elliff
(left) has been
named a vicepresident of the
Steward - Warner
Co. G. L. Meyer
was also named a
company vicepresident

Clyde B. Aitchison is now acting chairman of the Interstate Commerce Commission, succeeding J. B. Eastman. He was senior member of the I.C.C.



#### St. Louis Is Site of The ATA '42 Convention

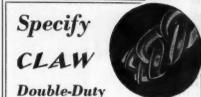
The annual meeting of the American Trucking Associations, Inc., will be held in St. Louis next October or November. The annual roadeo will again be held but emphasis will be given to ability to detect and prevent sabotage, promote first-aid and ability to work under black-out conditions.

#### Fruehauf Buys New Buildings

The Fruehauf Trailer Co. of Detroit, has purchased the Fort Wayne, Ind., plants of the Koppers Company and will utilize these properties for the manufacture of heavyduty haulage equipment. The plants which embrace a total of 45 acres have over 200,000 square feet.

#### Tire Theft Bill

In order to discourage tire thefts, Congress is considering a bill introduced by Representative Cochran (Mo.) to make the theft of tires a Federal offense and punishable by a fine of not more than \$1000 or not more than one year in jail or both.



#### TRUCK CHAINS

Columbus McKinnon Chain Corp.

Specify . . .

XACTO Printing Pump To Check Fuel Deliveries at the Pump

AKRAFLO Fuel Consumption
METER to Check
Fuel Consumption at the Motor

S. F. BOWSER & CO., INC. 1360 Creighton Ave. FORT WAYNE, INDIANA

#### COLLAPSIBLE GATES

Safe . . . easy and simple to handle. Zehr Chain Link Gates are all-welded steel designed for great strength and long continuous service. They are theft-proof, rustproof and flexible.



Distributors Wanted
WRITE FOR DETAILS AND PRICES.
ZEHR PRODUCTS COMPANY
2136 East Hazzard Street \* Philadelphia, Pa.

#### HOLLAND CAN "TAKE IT"

The smartest, most improved unit of its type, Model V-400 Vertical Lift Landing Gear is especially adapted for heavy duty service.

Powerful-rugged-dependable.

Complete truck and trailer equipment.
Catalog on request.

HOLLAND HITCH CO.

Spun glass retainer mats
are the secret of KATHA.

NODE'S longer service.
NODE'S longer service.
NODE'S longer service.
Trucks and busses.
Trucks and busses.
KATHANODE
Chicago, Ill.



HATHANODE
The Long Like
BATTERY

For information on

#### SHULER AXLES

see advertisement in the March issue



**Handy Battery Booster** charges 6-volt battery in about 2 hours — without removing battery from car or truck. Automatic Time Switch prevents over-charging. Ask for Bulletin No. 38. Price, complete, \$89.50

BALDOR ELECTRIC CO.

4340 Duncan Ave., ST. LOUIS, MO.



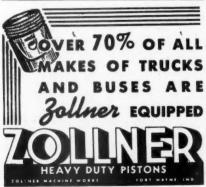
#### **Duplex Trucks**

**Heavy Duty and Special** Motor Trucks

Designed Especially For Road Maintenance, Construction and Snow Removal.

DUPLEX TRUCK CO. LANSING MICHIGAN





#### **Heil Appoints Distributor**

Palm Brothers of Omaha, Nebr., has been appointed by the Heil Co. as distributor for the complete line of Heil tanks, bodies, hoists, etc.

#### Flashlights for Blackouts

Preference order covering synthetic formaldehyde resins for making flashlights has been extended indefinitely following the change to classification 1 of flashlight production. The step was taken to assure adequate supply of such lights.

#### Women Truck Drivers

The Mineola, N. Y., branch of the Mack Truck Co. has been conducting classes in truck driving for women . . . just in case. Latest reports are that the females are coming along fine.

#### Story About Piston Rings

The history of piston ring manufacture is told in a booklet titled "Over 1000 Million Rings" just released by Muskegon Piston Ring Co., Muskegon, Mich.

#### **Tyson Builds New Addition**

Ground has been broken for a large new addition to the Tyson Roller Bearing Corp., Massioon, Ohio, manufacturers of tapered roller bearings. Ralph H. Maxson, president of the corporation, said the expansion program would cost a third of a million dollars.

#### Name Army Transport Head

The War Department has appointed Brigadier General James L. Frink as chief of the Motor Transport Division of the Office of the Quartermaster General. He had been serving as Deputy Quartermaster General.

#### **Automotive Industries Adds to Name**

Automotive Industries, semi-monthly magazine published by the Chilton Company, Philadelphia, has changed its name to Automotive and Aviation Industries.



International developed this 4x4, 11/2ton truck specially for the Marine Corp. Lt. Colonel F. S. Robillard, in uniform, is shown inspecting the vehicle with R. M. Eaves, IHC director of sales to the government and P. T. Brantingham (left), assistant chief engineer at the IHC Ft. Wayne works



Quickest. easiest, best for fleet care. Made in hollow, cast aluminum head with four foot handle supplying continuous stream of water. Bristles sturdily set in head and flare to 8" diameter. Weighs only 2% pounds. This brush will easily pay for itself many times over in a tew months. REFILLABLE AT SMALL COST. ORDER TODAY.

FLOUR CITY BRUSH CO.
MINNEAPOLIS, MINNESOTA PACIFIC COAST BRUSH CO. Los Angeles, Cal.



TRUCK WHEEL ALIGNMENT ANALYZER

"Operates on a Moving Vehicle"

THE TESTING APPARATUS COMPANY.

1627 West Fort Street, Detroit, Mich.



MANUFACTURED BY 37th ST., COR. 43rd AVE., LONG ISLAND CITY NEW YORK

For double mileage, double economy, get the double-bar-reinforced McKay Multi-Grip Truck Chain!

THE McKAY CO., PITTSBURGH, PA., York, Pa.



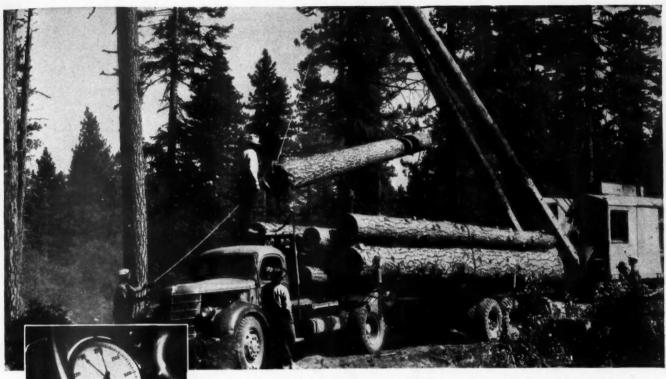
This Advertisers' Index is published as a convenience, and not as part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert

Accessories Corp 85	•
Acheson Colloids Corp144 Ahlberg Bearing Co62	Φ
Albertson & Co., Inc	Electric Auto-Lite C Electric Storage B The
Aluminum Company of America 3rd Cover American Automatic Devices	Erlinder-Platt Sales Everhot Mfg. Co Exide Batteries
Co	Federal-Mogul Corp Federal Motor Truc
Foundry Co	Ferodo & Asbestos, Fitzgerald Mfg. Co. Flour City Brush Co Flower City Specialt Foreman, W. D
Ring Co., Koppers Div 93 American Red Cross124 American Safety Tank Co 78	Four Wheel Drive A
American Steel Foundries	Frink, Carl H., Inc. Fruehauf Trailer Co Fuller Mfg. Co Fulton Co., The
Division	Gatke Corp General Electric Co.
Autocar	General Tire & Rub Globe-Union, Inc Goodrich Co., The, I
Available Truck Co	Grico Two Axle Dri Guide Lamp Div. Motors Corp
Baker Mfg. Co., The147 Baldor Electric Co149 Bendix-Westinghouse Automo-	Hall Mfg. Co., The. Hammer Blow Tool
tive Air Brake Co107 Blood Brothers Machine Co136	Hans Sattler Hansen Mfg. Co., A
Bolser Corp., The       84         Bostrom Mfg. Co.       102         Bowser & Co., S. F.       148	Haskelite Mfg. Corp Hastings Mfg. Co. Heil Co., The
Brace Engineering Co., Inc	Hein-Werner Motor Holland Hitch Co Hoof Products Co.
Carter Carburetor Corp	Hygrade Products ( Imperial Brass Mfg International Harve
Champ-Items, Inc	Johns-Manville Jones-Motrola Sales
Clawson & Bals, Inc	K-D Lamp Co K-D Mfg. Co Karpex Mfg. Corp.
Cole-Hersee Co	Kathanode Corp Kellogg Div. Ame
Continental Steel Corp. 6 Crescent Co	Shoe & Foundry (Kester Solder Co Kingham Trailer C
Curran Corp	Kinnear Mfg. Co Klauer Mfg. Co
Daniels, Inc., C. R	Knopf, Paul Koppers Co., Ame mered Piston Rin
Stamps         122           Deluxe Products Corp.         109           DeVilbiss Co., The         121	Libbey-Owens-Ford Lincoln Engineering
Diamond T Motor Car Co67-68 Dole Valve Co., The	Lindsay Structure Link-Belt Co Lipe, Inc., W. C Loney Co., Harley (
Dromgold & Glenn	McKay Co., The Mack Trucks, Inc Magnus Chemical
(Inc.)	Marmon-Herrington Marquette Mfg. Co Meehanite Research
Eastern Malleable Iron Co.). 80 Edison Splitdorf Corp 64 Edwards Iron Works, Inc 92 Elastic Stop Nut Corp	Michiana Products Midland Steel Prod Miley Co., L. J

•		
Electric Auto-Lite Co., The		
Federal-Mogul Corp.       91         Federal Motor Truck Co.       41         Ferodo & Asbestos, Inc.       94         Fitzgerald Mfg. Co.       146         Flour City Brush Co.       149         Flower City Specialty Co.       142         Foreman, W. D.       70         Four Wheel Drive Auto Co.		
Back Cover           Frink, Carl H., Inc.         144           Fruehauf Trailer Co.         147           Fuller Mfg. Co.         74           Fulton Co., The         144		
Gatke Corp.       110         General Electric Co.       63         General Tire & Rubber Co.       101         Globe-Union, Inc.       145         Goodrich Co., The, B. F.       147         Grico Two Axle Drive Co.       72         Guide Lamp Div. of General       Motors Corp.         95		
Hall Mfg. Co., The       12         Hammer Blow Tool Co.       138         Hans Sattler       142         Hansen Mfg. Co., A. L.       48         Haskelite Mfg. Corp.       142         Hastings Mfg. Co.       75         Heil Co., The       146         Hein-Werner Motor Parts Corp.       15         Holland Hitch Co.       148         Hoof Products Co.       66         Hygrade Products Co.       104		
Imperial Brass Mfg. Co., The116 International Harvester Co 16 Johns-Manville		
Sones-Motrola Sales Co		
Libbey-Owens-Ford Glass Co144         Lincoln Engineering Co		
McKay Co., The		

Miller Mfg. Co
Monmouth Products Co., The. 115 Monroe Auto Equipment Co. 127
Oakite Products, Inc
P. O. B. Mfg. Co., Inc137 Parish Pressed Steel Co., Sub-
sidiary of Spicer Mfg. Co151 Permalux Co., The146 Pierce Governor Co., The87
Purolator Products, Inc123 Quality Tools Corp142
Ramsey Accessories Mfg. Corp.145 Raybestos Div. of Raybestos-
Manhattan, Inc.       99         Reo Motors, Inc.       Front Cover         Reynolds Mfg. Co.       82         Royal Typewriter Co.       118
S K F Industries, Inc145 Safety Speed Control Co143
Salisbury Axle Co
Service Recorder Co., The         60           Service Spring Co.         135           Shuler Axle Co., Inc.         149
Signal-Stat Corp.       145         Snap-On Tools Corp.       88         Spicer Mfg. Corp.       151
Standard Motor Products, Inc. 100 Standard Oil Co. (Indiana) 11 Sterling Motors Corp145
Stewart-Warner Corp 1 Superior Sheet Steel Co., The (Division of Continental Steel
Co.) 6
Teleoptic Co., The       146         Testing Apparatus Co., Inc.       149         Texas Co., The       4-5
Thermoid Co
2nd Cover
Trailer Company of America111           Truckstell Co147           Trucktor Corp., The133
Tyson Roller Bearing Corp141 Valley Electric Corp144
Valvoline Oil Co
W G B Oil Clarifier, Inc141 Wagner Electric Corp.—Automotive Parts Div105-119 Walker Mfg. Co. of Wisconsin
Walker Mfg. Co. of Wisconsin 96-97
Walter Motor Truck Co103
Waukesha Motor Truck Co 65 Weatherhead Co., The 69 Weidenhoff, Joseph, Inc 98 White Motor Co.
White Motor Co.         49           Whitehead Stamping Co.         138           Williams & Co.         J. H.         135
Wiry Joe
Wolf's Head Oil Refining Co 83 World Bestos Corp 86 Vorkes Metal Bradwate Corp. 125
Yankee Metal Products Corp135 Zehr Products Co148 Zenith Carburetor Div. Bendix
Aviation Corp. 90 Zollner Machine Works

# "WOULD NOT PUT TRUCKS ON ANY OPERATION WITHOUT THIS EQUIPMENT"



### Manager of Fentress-Hill Logging Operation Says: Motor Mile Tachometer Cuts Trucking Costs!

See bow two stationary pointers mark limits of "economy range" on these trucks—making it easy for drivers to keep motor at correct speed for maximum efficiency. Warner recording tachometers.

"We found that one of the greatest factors in good operation was careful use of the tachometer... We certainly would not put any other trucks on any operation without supplying them with this equipment.

"The tachometer not only gives better performance and lower trucking costs, but gave us the most accurate method of figuring the cost of any truck operation. All of our costs have been broken down into tachometer miles, and our experience has shown that this is the best way to figure the rate on the truck haul."

You can LENGTHEN TRUCK LIFE AND S-T-R-E-T-C-H FUEL MILEAGE with the help of Stewart-Warner Motor Mile Tachometers! Others report fuel and repair costs cut as much as 25%—with maintenance expense sharply reduced! Mail the coupon for full information!

STEWART-WARNER TACHOMETER STEWART-WARNER CORPORATION 1876 Diversey Parkway, Chicago, Illinois

I operate ... trucks. Please give me all the facts about longer truck life and lower operating costs with Stewart-Warner Motor Mile Tachometers.

Name

Addres

City....

State

Firm Name

Another Product of



Revolutionizing Transportation

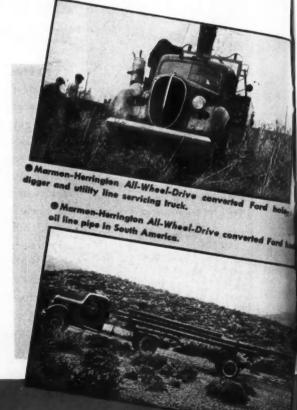


Transportation will never be the same after this war is over. Operators in road building and maintenance, snow-removal, in the oil fields, public utility services, and scores of other difficult jobs, on and off

the highway, will never be content to put up with less efficient trucks, after observing the performance of *All-Wheel-Drive* vehicles in military operations.

All-Wheel-Drive really does things that no conventional drive vehicle can do. It goes places, over desert, plain and field where no other vehicle can go. Neither hub-deep mud, sand, dirt or snow can stop it. "Impossible" hills and grades level out like magic. Get the facts about Marmon-Herrington All-Wheel-Drive converted Fords now. Write for literature.

MARMON-HERRINGTON Co., INC., INDIANAPOLIS, INDIANA Cable Address Marton



MARMON-HERRINGTON

-All-Wheel-Drive

# AS IT LUBRICATES!

# new life for your Heavy-Duty Engines

YOUR HIGH-SPEED DIESELS and heavy-duty gasoline engines will run more efficiently, develop maximum hp., operate at less cost . . . when you give them the benefit of this new oil—Texaco D-303 Motor Oil.

Texaco D-303 not only lubricates effectively . . . its high detergency and resistance to oxidation keep pistons, rings, filters and other parts CLEAN . . . freer from sludge, fuel soot, and varnish-forming deposits.

Texaco D-303 insures these important results-

- (1) It keeps piston rings free.
- (2) It keeps all engine parts, including filters, clean.
- (3) It provides maximum protection for modern bearings in the heaviest service.

The outstanding performance that has made Texaco preferred in the fields listed in the panel has made it preferred by heavy-duty truck operators everywhere.

These Texaco users enjoy many benefits that can also be yours. A Texaco Automotive Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distribution points in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York, N. Y.

# COURTS OF THE PROPERTY OF THE

Afew of the 26 trucks and tractor-trailer units of the Valletta Motor Trucking Co., Endicott, N. Y. serving Allentown, Philadelphia, New York and Boston. In use for the past 5 years . . . TEXACO exclusively.

#### THEY PREFER TEXACO

More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

More locomotives and cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

FOR YOUR ENJOYMENT Two Great Radio Programs



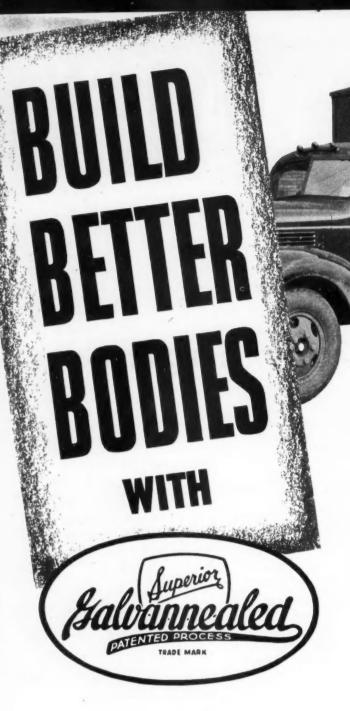
FRED ALLEN every Wednesday night. See your local newspaper for time and station.

METROPOLITAN OPERA. Complete broadcasts of great operas every Saturday. See your local newspaper for time and station.



### Lubricants and Fuels

FOR THE TRUCKING INDUSTRY

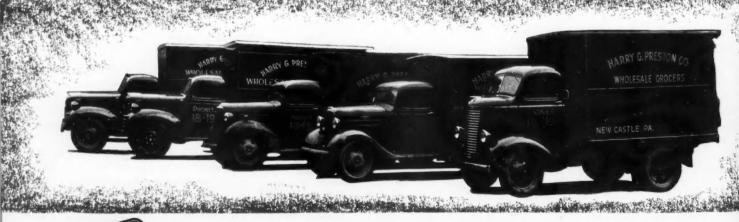


• Bodies built of SUPERIOR GALVANNEALED sheets are frequently handed down from one generation of chassis to another. Here you see just such a fleet—the bodies are all on their second chassis.

If you are not acquainted with the characteristics of SUPERIOR GALVANNEALED sheets you may wonder how this sheet puts longer life, better looks and lower maintenance cost into truck and trailer bodies. SUPERIOR GALVANNEALED sheets carry a zinc coating which is heat treated and bonded to the steel base. This treatment provides a "velvety" surface for painting but it serves another function still more important to the life of a body. The zinc coating underneath the paint resists rust and thus protects the life and lustre of the finish. Leading body builders can supply bodies of SUPERIOR GALVANNEALED and distributors of SUPERIOR GALVANNEALED sheets are located in principal cities.

THE SUPERIOR SHEET STEEL CO., Canton, Ohio

Division of Continental Steel Corporation, U.S.A.



CONTINENTAL STEEL CORPORATION



### LINCOLN LUBRICATING EQUIPMENT

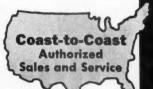
### plays an essential part in the war program by contributing to dependable performance of cars and trucks

Motor transportation, civilian as well as military, must be kept rolling . . . And to keep 'em rolling means that lubrication service is more essential now than ever before.

Milk trucks must be maintained so that they can make daily house-to-house deliveries. So must bakery, grocery and other trucks delivering necessities for human existence. Trucks must also be maintained for hauling defense materials to and from factories, and so must vehicles transporting people to and from work.

You have a great opportunity to be of service by providing proper lubricating service—and there IS Lincoln Lubricating Equipment available to help you do the job... For details, consult your nearest Lincoln jobber, or write us.

A42-14



### LINCOLN ENGINEERING COMPANY

Pioneer Builders of Engineered Lubricating Equipment ST. LOUIS, MO., U. S. A.

# NO SHORTAGE of DRY-ZERO!

# Delivery can be made on regular 10-Day Schedules

• The scarcity of raw materials has made it difficult to obtain delivery on certain types of low temperature insulation. However, Dry-Zero Corporation is pleased to announce that by building up exceptionally large stocks of raw materials and developing new sources of supply, it has averted a shortage of Dry-Zero Insulation. Deliveries of Dry-Zero Bound-Batt can be made on the regular ten-day schedule.

Dry-Zero Insulation has been established under test as the most efficient commercial insulant known ("k" factor 0.24). Properly installed, it retains its heat-stopping efficiency far beyond the life of the refrigerator. It is by nature water repellent (non-hygroscopic) and is remark-

ably free from settling, rotting, disintegration, and odor absorption.

Dry-Zero Bound-Batt is available in rolls that can be readily cut on the job, or in rectangular shapes of any size. It is stiff enough to handle easily, yet flexible enough to fit irregular contours—an ideal combination for high speed production. Dry-Zero Corporation, 222 N. Bank Drive, Chicago, or 60 E. 42nd St., New York.



**CUT TO SIZE**—Dry-Zero Bound-Batt can be furnished in rectangular shapes or 25-ft. rolls.



Write for List of Prices

### DRY-ZERO Insulation

The Most EFFICIENT Commercial Insulant Known



### **CHAMPION SPARK PLUGS**

### MORE VITAL-MORE DEPENDABLE THAN EVER!

In these days of rigid economy and material curtailments, a spark plug that gives dependable, economical performance is a godsend. And that's Champion's record and reputation as thousands of letters similar to the above testify. If you are experiencing any spark plug difficulties or high maintenance costs, it will pay you well to insist on Champions for all the units in your fleet. They are more vital—more dependable than ever.





# AXLE MAINTENANCE would have prevented this!

"Hurry it up" is right! Now — when every truck, every trailer is vital for victory—unnecessary breakdowns on the road must be avoided. It's every owner's and operator's duty to keep his equipment in shape — to keep it rolling! That's where A.M. (Axle Maintenance) comes in. We've had plenty of experience — practical experience — testing — studying ways

and means of caring for axles, brakes, tires and other vital points of trucks and trailers for better service and longer life. Now we've assembled many of these facts in a new booklet, "How Tires Affect Axles," free for the asking. Every truck owner, dealer and service man will find it helpful. Write for it today.



### TIMKEN AXLES

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICHIGAN WISCONSIN AXLE DIVISION, OSHKOSH, WISCONSIN



STANDARD FLEET
SERVICE HELPS
OPERATORS CUT
COSTS MANY WAYS

Automotive Engineer J. A. Mowbry (left) explaining the instruments he uses for checking fleet engines to Virgil Pate of the Oswald-Sparrenberger Truck Company at Evansville, Indiana.

Exhaust gas analysis, a check of compression pressures, and a thorough test of the ignition system are some of the methods an Automotive Engineer uses to get accurate information on the condition of fleet engines. These tests on a few units in your fleet may save hours of maintenance time on the whole fleet.

### HELPS BUS AND TRUCK FLEETS MAKE MAINTENANCE RECORDS

Here's one reason why even the best equipped fleet maintenance departments have found Standard Automotive Engineering profitable.

These Engineers know what the fuels and lubricants they recommend have done on other fleets. They know the cost-saving records that have been made on equipment just like yours. They're interested in helping you equal or better these records.

Gasoline and oil consumption records aren't the only items. Exhaust smoke, spark plug replacements, wheel bearing failures, and Diesel injector wear are some of the many problems which these Engineers have helped solve for bus and truck fleet operators.



### HELPS CONTRACTORS AVOID DELAYS ON THE JOB

Are you getting ready to put your gasoline and Diesel powered equipment in condition for the big construction season to come? Put a Standard Automotive Engineeer to work right now on this job.

He'll recommend the fuels and lubricants you need, and help your maintenance men tune and adjust your equipment to use these products most economically. But more than that, when your equipment goes on the job, one of these Engineers will see that you get exactly the products you need where and when you want them.

#### IT COSTS NOTHING TO FIND OUT HOW A STANDARD AUTOMOTIVE ENGINEER CAN HELP YOU

Wouldn't you like to know just how these Automotive Engineers work and what they do? You don't have to obligate yourself in any way to find out. Just write one of the local Standard Oil Company (Indiana) offices listed below or write 910 South Michigan Avenue, Chicago, Illinois. In Nebraska, write Standard Oil Company of Nebraska at Omaha. Ask for the Engineer nearest you. He'll be glad to explain his work and answer your questions.

COLORADO Denver

ILLINOIS Chicago Decatur Joliet Peoria

INDIANA Evansville Indianapolis South Bend Davenport Des Moines Mason City

KANSAS Wichita

MICHIGAN Detroit Grand Rapids Sagingw MINNESOTA

Duluth

Mankato

Minneapolis

MISSOURI Kansas Cit St. Louis

MONTANA

NORTH DAKOTA Fargo

SOUTH DAKOTA

WISCONSIN Green Bay La Crosse Milwaukee

NA WYOMING Cheyenne

Copr. 1942, Standard Oil Company (Indiana)

STANDARD OIL COMPANY (INDIANA)

**AUTOMOTIVE ENGINEERING SERVICE** 

LOWERS MILEAGE COSTS



PROFIT · SPEED · PRECISION OPERATING COST

LEFT: Model EJ ECCEN-TRIC Valve Seat Grinder —a real machine tool; duplicates factory precision and finish.

LEFT: Ring Ridge Reamer.
Removes top cylinder
ring ridge quickly and
easily; leaves a
smooth finish.
Range 2.6" to 4".

Needed on every ring and rod job

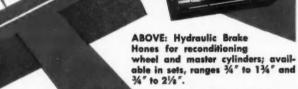


act fit desired. Saves reamer and reamer sharpening costs. Can be used for rounding, enlarging or polishing small holes in any metal. 2 sets: range .484" to .750" and .740" to 1.150" ABOVE: Model 80 Wet Type Valve Refacer. Finest precision and mirror finish without distortion or surface burning. Many exclusive features and attachments including stem grinding attachments so accurate that tappet adjusting is unnecessary.

Duplicates factory precision and finish



BELOW: Model H Cylinder Hone. Use it wet or dry. Get finer finish faster. Range 2.6" to 51/2". Range can be increased to 61/8" with special oversize stone carriers.



LEFT: Adjustable Valve Guide Cleaner. 4 tools cover  $\frac{5}{16}$ " to  $\frac{31}{2}$ ".

Get more business
—turn it out better
and faster—at less
cost and
more profit.





for HALL EQUIPMENT and get the BEST FROM EVERY ANGLE. But, please be patient if he can't deliver as promptly as usual; Uncle Sam demands HALL equipment, too—and lots of it.

If you prefer, or if your Jobber can't serve you, write the factory for complete information



# FROM GENERATOR TO SPARK PLUGS MY CHOICE IS AUTO-LITE



# One Driver tells another... "depend on AUTO-LITE"

UNFAILING performance on the job, year in, year out, has given Auto-Lite Automotive Electrical Units an international reputation for dependable service . . . has made Auto-Lite the world's largest independent manufacturer of automotive electrical equipment.

Drivers, service men, owners, know that faultless electrical performance helps maintain schedules, improve profit

showings. So their choice is Auto-Lite for spark plugs, starting motors, generators, coils, distributors, batteries, switches, wiring harness, horns, current and voltage regulators, "Sealed Beam" and auxiliary lights. Look for the name "Auto-Lite" when you next buy equipment, a sure guide to extra dependability and lower maintenance costs.

THE ELECTRIC AUTO-LITE COMPANY
TOLEDO, OHIO
SARNIA, ONTARIO

THE WORLD'S LARGEST INDEPENDENT MANUFACTURER OF AUTOMOTIVE ELECTRICAL EQUIPMENT

AUTO-LITE

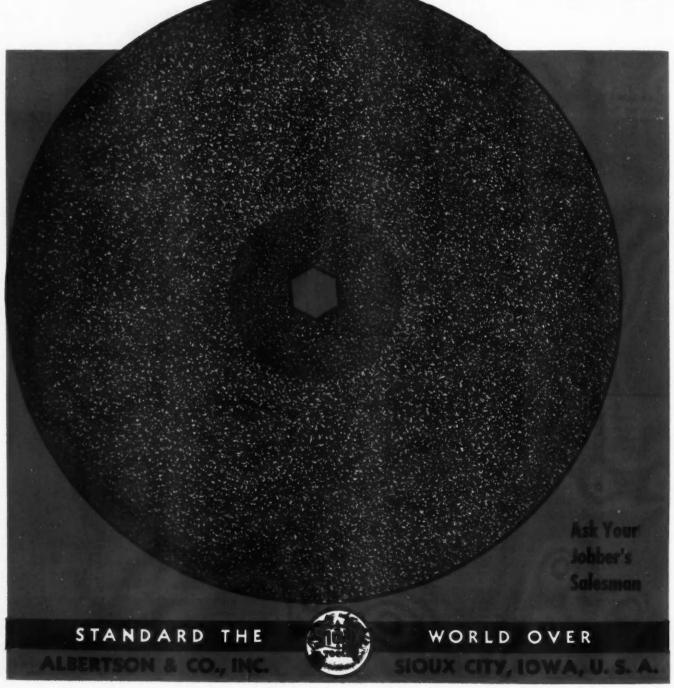
SPARK PLUGS . STARTING
LIGHTING . IGNITION

### Cool and Tough on Hardest Sanding Jobs

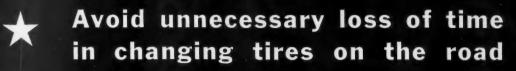
SIOUX Phenol Abrasive DISCS remain cool, clean and fast cutting.

They are flexible for concave, convex and reverse curve sanding, and their double life provides continuous cutting action.

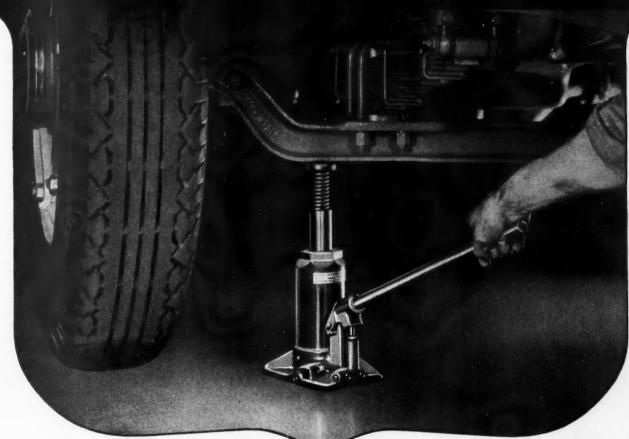
SIOUX
PHENOL ABRASIVE
DISCS



### SPEED UP DELIVERY OF WAR MATERIALS









5 Tons

# Equip every truck with a HEIN-WERNER HYDRAULIC JACK

The war makes it more important than ever that the tool kit of every truck have a dependable jack such as a Hein-Werner Hydraulic Jack. These jacks are fast and easy to operate. And every minute saved in changing a tire may save hours and days in the completion of a war material order.

Since time is so important, it will pay you to equip your fleet with H-W Jacks. The complete line includes models of  $1\frac{1}{2}$ , 3, 5, 8, 12 and 20 tons capacity.

For details and latest prices, ask your H-W jobber, or write us

HEIN-WERNER MOTOR PARTS CORP.
Waukesha, Wisconsin

HEIN-WERNER
HYDRAULIC JACKS
Are Built Right and Priced Right



12 Tons



20 Tons



### onuce TRANSPORTATI SERVICE TO THE NATION AMERICA'S TRUCKS are challenged today with the task of doing double-duty and hauling at double-quick time... extra hours, more trips, faster schedules. The trucks now on the job must carry the big load, for there will be fewer and fewer new ones available for replacement. The result is that Truck Service is of first importance in answering the call to "keep 'em rolling." International's 250 Company-owned branches and thousands of dealers are responding to that need by equipping themselves to do a service job better than ever before-to keep both new and used trucks operating at peak efficiency. The new Scheduled Preventive Maintenance Program is one example of International cooperation. Its aim is the inspection of all wearing parts, at scheduled intervals, to help prevent wear before it starts. It greatly reduces operating costs. It helps keep trucks at work. Trained personnel, modern equipment, and complete stocks of first-quality parts are the cornerstones of the International dealer's service program. Keep America's trucks rolling for INTERNATIONAL HARVESTER COMPANY 180 North Michigan Avenue "We, the Servicemen of INTERNATIONAL TRUCK will give our best to keep America's trucks rolling!" ERNATIONAL SERVICE

# Mosquitoes!.."Keep 'em Flying"

• Every branch of Uncle Sam's armed forces . . . on land, sea and in the air . . . looks to dependable truck transportation to help "Keep 'em Rolling, Keep 'em Flying."

The speedy P. T. boats of the Navy's so-called Mosquito Fleet are no exception. Refueling them, wherever they dock . . . on split-minute schedules . . . is just one direct wartime job that thousands of White Trucks are doing. To see them on the road . . . in ordinary "working clothes" . . . you would not suspect their vital role.

The same is true of thousands of other Super Power Whites working at airports, navy bases, army camps, construction projects . . . and in many other ways directly aiding an America at war. Their extra dependability . . . truckmen call it extra earning power . . . means fewer precious hours lost from service and is another example of what a better truck can do.

#### THE WHITE MOTOR COMPANY . CLEVELAND

Builders of U. S. Army Scout Cars and Half-Tracs, the complete line of Super Power Trucks and Tractors, City and Inter-City Coaches, Safety School Busses and the Famous White Horse.



FOR 40 YEARS THE GREATEST NAME IN TRUCKS

### STRAIGHT HINTS ABOUT BATTERIES

or how to get up to double battery life in your trucks and busses



1. You certainly would be happy as a lark, if you found you could double your present battery life and cut your battery maintenance costs in half. Tests to S.A.E. specifications help prove it. Bus and truck road performance are confirming it. How's it done? Here's how...



2. Ordinary battery plates get in terrible shape. The active material sheds off the grids, slowly sinks to the battery floor. This constant "shedding" action accelerates plate corrosion. These are two of the basic causes of battery failure. But you can do something about it . . . (continued in next frame).



**3. Look here!** This is a battery with a Fiberglas\* retainer mat. This mat holds active material on positive plates... retards battery failure... increases battery life... cuts battery maintenance costs! Also, this mat allows electrolyte to flow freely, making for excellent cold-starting characteristics and greater power output during battery life. So...



4. Here's a straight hint to remember: Specify Fiberglas-protected batteries. Fiberglas-protected batteries perform longer with less "time-out" for maintenance or replacement. Look at the directions below. From these directions you'll find out how to get these protected batteries.

Your battery manufacturer is engineering longer life, better performance, and maximum user value into his batteries to make the most effective use of strategic raw materials. Most of them are using Fiberglas. Ask your battery supplier for Fiberglas-insulated batteries. If he's unable to supply you, write us for list of firms who can. Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas Canada, Ltd., Oshawa, Ontario.

• Trade-marks Reg. U.S. Pat. Off.



### Diamond T... on Duty... in defense of Freedom

FASTER and faster, the finest military vehicles in history are rolling down Diamond T's vastly expanded production lines. Every iota of the engineering wisdom and the shopcraft acquired in Diamond T's 30 years of building fine trucks is focused in the service of our nation and its allies.

That task comes first. It includes, of course, the building of commercial vehicles as well as military, because the needs of a nation at war are not served only at the firing line.

One day, there will be peace again—and you, and we, and all other men of good will may deal without hindrance or menace in such wholesome needs as fine new trucks to serve business. Meanwhile, we serve a cause worth all our efforts . . . the defense of freedom.

DIAMOND T MOTOR CAR COMPANY





# "184,000 mountain and desert miles before head or pan of the engine were touched!"

ONCE more a Diamond T owner tells you what Diamond T Super-Service engineering had meant to his business. His words are typical.

"Our model 509 was recently overhauled and has since covered 11,000 miles with its oil and gas consumption as good as new. This unit was put into service on October 5, 1940, and in the next 8 months covered 184,000 miles, maintaining a 24 hour schedule through extremes of weather that ran from mountain snows to the summer desert. The head and pan never were touched during the 184,000 miles.

"When the motor was opened for new rings and bearing inserts we miked the cylinders and found them out from  $2\frac{1}{2}$  to 3 thousandths. The journals were only out  $\frac{1}{2}$  thousandth.

"The newest model 509, delivered to us September 16, 1941, has covered 37,000 miles and promises to give the same performance record that we have come to expect from any Diamond T's.

"Our business demands night and day hauling with no time allowed for break downs. Our 6 Diamond T's have all given the same good service and we can say the same for the ones we formerly owned. Our drivers are all carefully picked, and we have no trouble in keeping them, for they all claim that Diamond T's are the easiest of all trucks to handle and to hold up to a very exacting schedule."

Very truly yours, RALSTON OIL COMPANY

ALSTON OIL COMPANY Harold Ralston, President

That is the kind of performance that Diamond T trucks are expected to deliver when properly maintained. We have written records by scores and hundreds. And your Diamond T dealer has the simple engineering reasons for Diamond T operating economy. In these days, when every serviceable truck you own is an asset for National Defense, Diamond T endurance-ability is a mighty force in conserving man-hours and materials.

DIAMOND T MOTOR CAR COMPANY

Established 1905

Factory and General Offices, Chicago, Ill.

### DIAMOND T

MOTOR CAR COMPANY, CHICAGO



GUIDE DIRECTIONAL SIGNALS — Solidly built turn-indicator systems that give easily visible signals. Choice of single- or doubleface lamps and several types of mounting.



GUIDE UNIVERSAL REPLACEMENT HEADLAMP AS-SEMBLIES—Dependable, sturdy, complete headlamp assemblies for replacement of damaged or worn-out equipment.



GUIDE STIMSONITE REFLECTORS — Manufactured of shatterproof plastic, these sturdy reflectors are important safety equipment for all fleets. Universal in application.



Guide products and service parts are available through independent United Motors distributors served by 20 conveniently located warehouses. This

wide availability of parts and service is important to truck and bus operators.



# EQUIP YOUR FLEET WITH GUIDE AUXILIARY LAMPS

You can count on Guide auxiliary lamps for years of dependable service. They are built to stand up under the hardest fleet assignments. There are auxiliary lamps for driving and passing, and other lamps designed to improve visibility in bad weather. These have special bulb caps, prefocused bulbs and lenses, to control stray beams that cause blinding reflections from moisture particles.

Guide auxiliary lamps are easily serviced. Replacement parts are immediately available through United Motors distributors everywhere.

Guide auxiliary lamps are made in many styles and lens types. See your jobber today about the models best suited to your own fleet requirements.



WORLD'S LARGEST MANUFACTURER OF AUTOMOTIVE LIGHTING EQUIPMENT



THE "SERIES 900" - Engineered for commercial and fleet service, these rugged Walker portables give you concentrated, dependable hydraulic lifting power. Complete range of sizes from 5 to 20-ton capacity. All have the extra quality that has made Walker the standard of value.

• We, at Walker, are pretty proud of the part our famous "Series 900" is playing in this great battle for freedom-not only in the service of Uncle Sam . . . but on the far-flung battle fronts of the world. To us, it proves as nothing else can prove, that Walker Jacks are the kind of jacks that "can take it" . . . rugged, dependable . . . precision engineered . . . Jacks you can count on when the "going is toughest" and the need the greatest.

So, when your own fleet goes into vital action in the "service front" . . . transporting goods and supplies for the defense industries of America . . . be sure it won't be slowed down or stopped by inadequate jack equipment. Put a powerful, dependable Walker Portable Hydraulic in the tool box of each unit. Avoid time-wasting delays by getting a "Series 900," big enough and powerful enough to lift payload and all.

Packed with exclusive engineering features that mean greatest dependability and long life, the "Series 900" portable hydraulics are the result of years of manufacturing experience and engineering development that have made Walker the world's leading builder of automotive lifting equipment. Don't be satisfied with anything less than Walker quality-Talk over your jack needs with your Walker Jobber Salesman.

THE WALKER MANUFACTURING COMPANY OF WISCONSIN, RACINE, WIS. akers also of Electric Lifts and Exhaust Silence

FOR BENCH SERVICE—Walker offers a wide range of heavy-duty brutes for bending or push-Ing operations. Dual oil control enables them to work standing up or lying down on either side, eliminating the unnecessary investment in "rights" and "lefts"! 12 and 20-ton capacity.

FOR UNDER-CAR SERVICES-Here's a specialized lifting tool that makes a safe, one-man job out of a difficult and dangerous two or threeman job. See the Walker Unit Lift for handling such difficult things as heavy transmissions, differentials and rear axles.

FOR FLOOR SERVICE—Designed for power and maneuverability, and built for punishment, Walker Hydraulic Roll-A-Cars handle tough lifting jobs with ease and safety. You'll like the sleek Greyhounds for most work and the great 10-ton Walker Hydraulic for your heaviest trucks and buses.



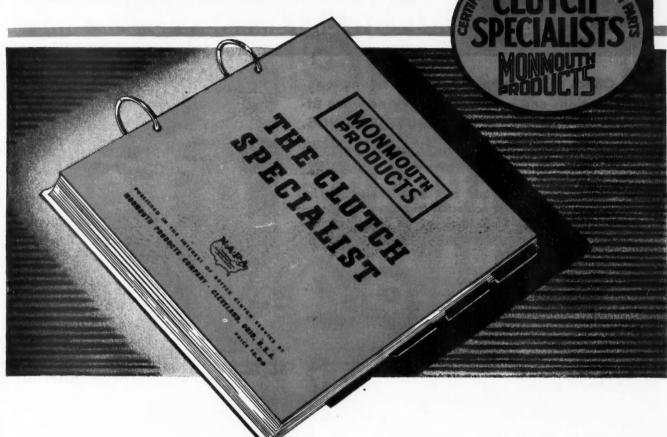




When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL

To Increase Your Earning Power—Profits and Reputation for Good Workbe a MONMOUTH CLUTCH SPECIALIST



THERE'S one in every community—a repairman who rates tops with car owners because his jobs are right and stay right.

He is the man who knows his stuff-who doesn't depend on old rule-of-thumb but keeps up to date with exact knowledge of clutch requirements on modern cars-he is a clutch specialist.

The Monmouth Clutch Specialist

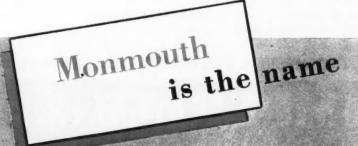
Manual gives exact information on how to locate trouble, properly repair, replace, and adjust every known make of clutch. It is offered of their work-its use builds earn-

to the kind of men who are proud ings, profits, and reputation. The NAPA jobber near you can explain this service and tell you how to get it. Write direct if he doesn't answer promptly.



THE MONMOUTH PRODUCTS COMPANY, CLEVELAND, OHIO

For Engine Bearings Clutch Plates and Parts King Bolt Sets



# 52

### SUGGESTIONS

-that will help you reduce fleet maintenance costs and eliminate loss of time



Check your copper or steel tubing connections and replace all leaky or worn fittings with IMPERIAL HI-DUTY FITTINGS.

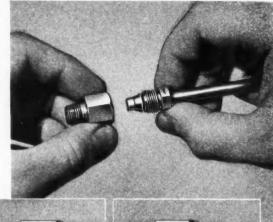
This is the fitting originated by the Imperial organization to reduce failures due to vibrations. The three diagrams show the simplicity of the design.

It is easier to assemble and cuts installation costs for it does not require flaring or soldering and there is no loose sleeve to contend with. The fitting can be connected and reconnected and will always be tight. There is no flare to shear off when tightened

excessively.
You can save a lot of time and trouble for your men by using this Imperial Hi-Duty Fitting and Bundy Tinned Steel Tubing on your fleet.



Hi-Duty Fitting ready for assembly





Section through Hi-Duty



Disassembled Hi-Duty Fitting showing how sleeve is now a permanent part of tube



Make up your flexible lines for gas, oil, grease and vacuum service by using IM-PERIAL NEOPRENE TUBING & FITTINGS.

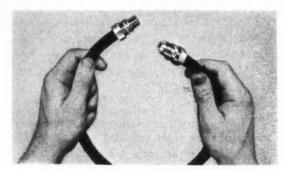
You can get an assortment of fittings and a coil of tubing that will enable you to handle practically all of your flexible line replacement work.



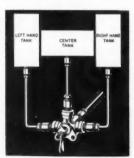
Install IMPERIAL No. 114-HD FOUR-WAY HI-DUTY SHUT-OFF COCKS on all vehicles where three fuel tanks are used.

This valve eliminates the necessity for dangerous stops on highways to change from one fuel tank to another. The driver can make the change from tank to tank right from the cab without even slackening speed.

• Ask your Jobber for Imperial Catalog No. 122. It contains over 80 pages of items that will help you improve the performance of every unit in your fleet.







THE IMPERIAL BRASS MFG. CO., 1209 West Harrison Street, Chicago, Illinois

### IMPERIAL Automotive Products

THE PITTINGS & PLEXIBLE TUBING & TUBING SERVICE TOOLS & BATTERY TESTERS & FREEZETESTERS & WELDING OUTPITS AND SUPPLIES

... and now

### CHEVROLET

announces a great nationwide



# CONSERVATION PLAN"

Inuck

To help keep America's trucks serving America for the duration

Conserve TIRES

Conserve GAS

Conserve OIL

Conserve ENGINE

Conserve TRANSMISSION

Conserve COOLING SYSTEM

Conserve BRAKES

Conserve EVERY VITAL

Trucks are playing a vital part in America's Victory Program ... serving agriculture—serving industry—serving all America.... Keep your trucks on the job by taking especially good care of them—by having regular service "check-ups"—and by deciding to adopt Chevrolet's "Truck Conservation Plan."... See your Chevrolet dealer for full details—today! Remember—Chevrolet dealers service all makes of trucks.

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT, MICHIGAN

A MOBILE NATION
IS A STRONG NATION

Always SEE YOUR LOCAL CHEVROLET DEALER FOR SERVICE

# The bugs of Borneo are wilder than ever

YOU WOULD HARDLY BELIEVE that the peculiar appetite of insects in far-off Borneo could be of any concern to a type-writer manufacturer in Hartford, Conn. But it is.

Some time back, we began getting reports from Royal owners, in that by-no-meansmajor market, that the fabric on Royal Portable Typewriter cases was proving far too inviting to a certain variety of local pests.

So inviting, in fact, that the bugs were eating it.

Now, let it be understood that this practice was distinctly limited to the island of Borneo. From nowhere else on the face of this globe had we received such a complaint.

Nevertheless, experiments were conducted and tests were made. As a result, all Royal Portable cases today are covered with a coat of special lacquer (bug-proof). Which means, in turn, that a Royal buyer, whether in Borneo or Hoboken, now gets a better case for his money!

This may seem to be going to extreme lengths to satisfy complaints, but Royal owes its leadership in the typewriter field largely to such practices. For a typewriter is simply the sum total of thousands of such minute details.

Only by giving each detail our most complete attention has Royal attained its position as the World's Number 1 Typewriter.



Copyright 1942, Royal Typewriter Company, Inc.



ROYAL

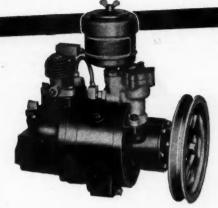
Worlds No.1

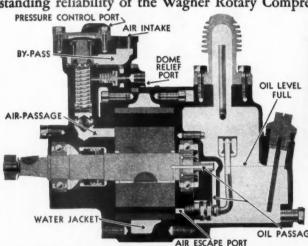
TYPEWRITER

# The \*WAGNER AIR BRAKE

with the reliability that only a rotary compressor can give

Because of the high efficiency, outstanding economies and thorough reliability of Wagner Air Brakes, they are fast winning favor with truck, tractor, trailer and bus operators everywhere. • Fleet owners and truck operators, who have already equipped their vehicles with Wagner Air Brakes, are establishing records for safety and low brake maintenance. This superior performance is due in part, to the outstanding reliability of the Wagner Rotary Compressor.





Cross section drawings, operating information, performance curves, and complete information on the Wagner Rotary Compressor are contained in Section 1—bulletin 1 of Catalog KU-40. This bulletin as well as Catalog KU-50, which explains and illustrates the complete line of Wagner Air Brakes will be sent free upon request.

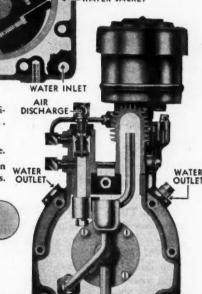
OIL PASSAGE

### POINTS OF EXCELLENCE OF THE WAGNER ROTARY COMPRESSOR...

- 1...Rotary motion no reciprocating parts.
- 2...Perfect running balance at all times.
- 3...Longer belt life due to more uniform torque loading.
- 4...Low friction losses therefore high operating efficiency.
- A pre-determined air pressure automatically maintained.
- 6... Operating parts "wear-in" instead of "wear-out," consequently long life and low maintenance cost.
- 7... Extremely quiet in operation.
  - 8...Self-contained oiling system—oil is not contaminated by grit and acid from the crank case... consumes practically no oil.

WATER OUTLET

- 9...Compact-requires minimum installation space.
- 10...Low operating temperature prevents carbon formation in the compressor and delivery lines. OUTLET



WATER OUTLET

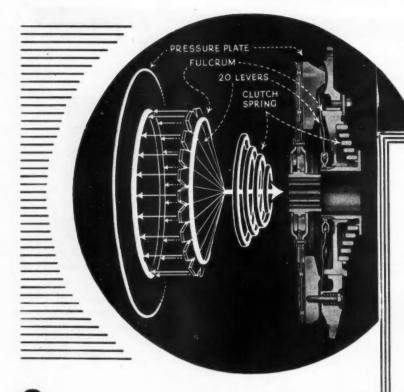
### \*THERE ARE 3 WAGNER AIR BRAKE SYSTEMS:

(1) The Wagner Hydrair Brake, the system that combines air power with hydraulic actuation; for commercial vehicles equipped with cam brakes, (2) the Wagner Air-Hydraulic Brake for commercial vehicles equipped with internal hydraulic brakes, and (3) the Wagner Straight-Air Brake, for commercial vehicles equipped with straight-air-actuated cam brakes.

K42-5

### WAGNER ELECTRIC CORPORATION 6470 PLYMOUTH AVE. ST. LOUIS, MO., U. S. A.

# Every Part of the Plate Touches Evenly ... and at the SAME INSTANT



That's why

### LIPE

**HEAVY-DUTY** 

### CLUTCHES

Will Not Grab!!!

A single spring instead of a dozen or more unbalanced springs—plus the fact that the pressure is equally distributed all around the plate by 20 self-balancing pressure fingers. The Lipe clutch plate never cocks, never heats unequally, and never grabs.

- 1 no shock loadings
- 2 no burned patches
- 3 less wear and strain on the drive line
- 4 less wear and scuffing of rubber
- 5 more engagements between clutch tear-downs
- 6 longer clutch life

F course, if you race the engine when engaging the clutch, there's bound to be slippage between the plates. That's what plates are in a clutch for.

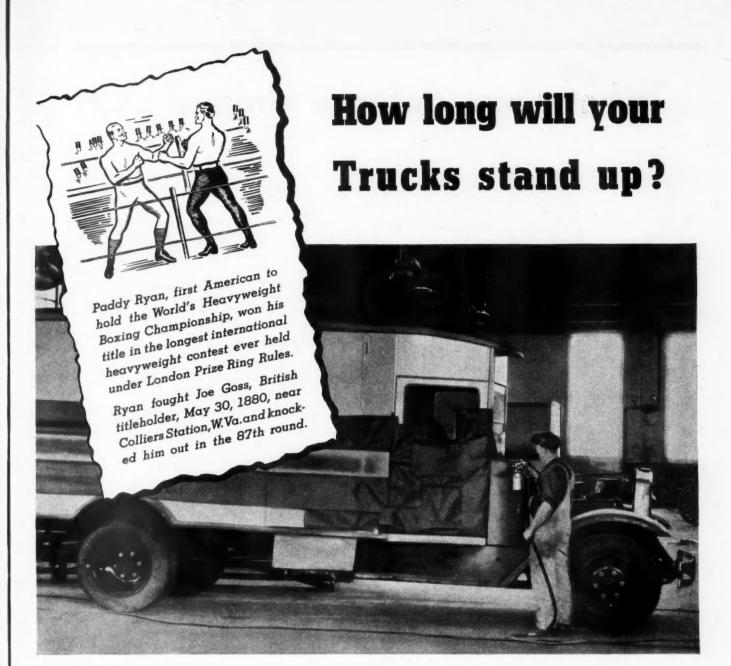
But here's the important difference in LIPE Heavy-Duty CLUTCHES. Lipe plates are always parallel—never cocked. They always come together evenly, and at the time instant. Slippage is evenly distributed all over the face of the plate. There are no high spots to burn. No cocked plates to grab. No shock loadings—pick up of the load is smooth. Lipe clutches are easier on the engine, the drive line and the rubber.

MAKE THIS TEST: Drive a Lipe-equipped truck and see for yourself how you can get started smoothly, positively with a heavier load AT A MUCH SLOWER ENGINE SPEED. Notice that you don't have to baby the clutch or to slip it with your foot. The smooth engagement is automatic. That's why Lipe Clutches wear longer . . . why there's no grabbing . . .

and NO SHOCK LOADINGS.



W.C.LIPE, INC. Syracuse, N.Y.



• Trucks, too, must be in shape for a finish fight today. It isn't going to be as easy to replace them with new ones. Transportation needs are going up, while available new equipment is decreasing. They've got to be able to stand up and take it—longer hauls, heavier loads, faster schedules.

There's only one way to help your trucks do that. Keep'em in first class running order at all times, with proper maintenance equipment. Keep off marks of wear and age, and prevent the damage that comes from neglect. Use DeVilbiss Spray Painting Equipment.

With this kind of care your trucks will give championship performance, to the last round.



THE DEVILBISS COMPANY . TOLEDO, OHIO

Canadian Plant: WINDSOR, ONTARIO

SPRAY SYSTEMS



SERVICE EQUIPMENT

SPRAY PAINTING EQUIPMENT . EXHAUST SYSTEMS

- AIR COMPRESSORS AIR, PAINT, OIL, GASOLINE, WATER AND WELDING HOSE HOSE CONNECTIONS
- · OIL AND DUSTING GUNS · PAINT STRIPERS

### What your defense dollars buy



The TANK is to the Army what the tackle is to the forward line of a foot-

ball team. It is the "break-through." Head-on, it crashes timber, houses, enemy fortifications. Once it has opened the way, the attacking force follows for the "mopping up."

The Nazis, using these great steel pachyderms which they produce in vast quantities, have been able to break through every fortified line in 14 conquered countries.

In America, the medium-sized tank is the popular size. A medium-size tank weighs 30 tons. To make it takes as much steel as would be used in 500 refrigerators, as much rubber as goes into 87 average automobile tires.

The planning of a tank takes as great skill as a large-scale construction job. One recently converted automobile plant, faced with retooling for tank production, had to put 200 engineers to work in day and night shifts for one month, mapping out machinery requirements and plant layout.

To match the mechanical might of aggressor nations today, America needs thousands of these tanks. They're rolling off the assembly lines now. They cost real money. Every time you buy an \$18.75 Defense Savings Bond or a 10¢ Defense Saving Stamp, you give your country money enough to buy a vital part for another new tank.



### BUY DEFENSE SAVINGS BONDS and STAMPS

AT ALL BANKS, POST OFFICES, AND SAVINGS AND LOAN ASSOCIATIONS



### Don't overlook the vital importance of CLEAN OIL!

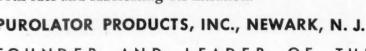
Naturally, no engine can live long without good lubrication. But without clean oil, good lubrication simply isn't possible!

To keep your engines running longer, keep your oil clean with Purolator. Get sure protection against motormuck-harsh, sticky, gummy dirt that gets into any oil and shortens the life of pistons, rings, valve assemblies and other lubricated parts. Purolator keeps oil clean, lets it do its proper job.

Whenever oil filter "refills" are needed, be sure to get genuine Purolator elements. They hold more dirt...and last longer. The complete Purolator line includes replacement elements for all types of installations...for both fuel and lubricating oil filtration.

PUROLATOR PRODUCTS, INC., NEWARK, N. J.





PUROLATOR

What worm Pod Cross amountly monds

### Why your Red Cross urgently needs

### FIFTY MILLION DOLLARS, NOW

## How the fund is allocated . . . What it does in service

Every dollar that you give now to your Red Cross marches into the thick of things where humanitarian help is needed most—up to the fronts and battle stations where the fighting is heaviest. Into the Red Cross hospitals and First Aid units where prompt medical attention and supplies may save innumerable lives. And throughout our broad land to train and equip volunteers to meet any emergency that may strike.

### How the \$50,000,000 War Fund is Used

#### SERVICE TO THE ARMED FORCES • • • • • • \$25,000,000

Provides for the care, welfare and morale of the Army and Navy, including services to men in hospitals and during convalescence. • Provides an important link between the service men and their families; keeps the families from breaking up, supplies food, shelter, medicine, and even jobs where necessary. • Provides essential medical and other supplies outside of standard Government equipment. • Operates Red Cross headquarters at camps and naval stations. • Enrolls blood donors and medical technologists for Army and Navy needs. • Provides millions of surgical dressings, sweaters, socks, etc., through volunteer workers.

#### DISASTER AND CIVILIAN EMERGENCY RELIEF • • \$10,000,000

Supplies emergency needs for food, clothing, shelter and medical attention for disaster victims. • Assists stricken families in repair of homes and other adjustments; provides minimum reserves of essential relief supplies to prevent unnecessary delays.

#### CIVILIAN DEFENSE SERVICES • • • • • • • \$ 5,000,000

Trains volunteers for home nursing and nurses' aides. • Trains nurses, men and women, for active duty with the Army and Navy. • Trains volunteers in First Aid and accident prevention. • Trains volunteers for work in Motor Corps, Canteen and Production. • Instructs men, women and children in preparedness against explosive and incendiary bombs. • Organizes for evacuation of children and their families from stricken areas. • Assists Red Cross Chapters in establishing effective coordination of emergency relief with local and State defense authorities.

#### SERVICE AND ASSISTANCE THROUGH CHAPTERS • \$ 4,000,000

Gives assistance and service to the 3,740 Red Cross Chapters with their 6,131 Branches responsible for local Red Cross activities, particularly welfare work among the service men and their families.

#### OTHER ACTIVITIES AND CONTINGENCIES • • • • \$ 6,000,000

Provides for unforeseen expansions in program and for new activities made necessary by unexpected developments.

#### TOTAL • • • • • • • • • • • • • • • • \$50,000,000

### THE AMERICAN RED CROSS \$50,000,000 WAR FUND

Note to Red Cross Canvassers: Use this material to better inform contributors how their donations are being expended.



### THEY'VE GOT WHAT IT TAKES

WHETHER it is the young R.A.F. bulldog who goes up to meet odds of 3 to 1 against him—singing "There'll Always be an England"—or the bow-legged courageous dog with famous, under-shot jaw, they both can be depended upon to stick and see it through.

We like to think that this is one of the fine qualities of PUSH-PULL AUTOMOTIVE CONTROLS, too. You can depend on these controls to outlast the toughest work you can give them. They're strong. They're tough. You'll find that they've still "got what it takes" after the job you put them in has made its last trip. But you don't have to wrestle with them. They are always easy to operate because the moving part functions in a bath of lubricant that is so sealed that no grit or moisture can reach it.

Those are mighty important qualities—of real value to equipment that must serve under the program of Production for Victory.



#### **AUTOMOTIVE AND AIRCRAFT DIVISION**

6-235 GENERAL MOTORS BLDG., DETROIT . 630 THIRD STREET, SAN FRANCISCO

AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT • CONNECTICUT







Readers Pay to the order of

### CHILTON AUTOMOTIVE PUBLICATIONS

\$259,000

ANNUALLY

for AUTOMOTIVE PUBLICATIONS and SERVICES

Subscribers to Chilton Automotive Publications and Services pay more than a quarter of a million dollars every year, to read and refer to AUTOMOTIVE and AVIATION INDUSTRIES, MOTOR AGE, the CHILTON FLAT RATE & SERVICE MANUAL, the CHILTON BODY & FRAME MANUAL, and COMMERCIAL CAR JOURNAL.

That averages \$3.00 per reader, ex-

cluding the truck fleet distribution of Commercial Car Journal and Chilton Automotive Buyer's Guide circulation, which is controlled.

We mention this largely to bring to your attention the fact that first of all CHILTON Company is in the publishing business, as compared with some publishers who may first of all be in the advertising business.

Please NOTE: Chilton Flat Rate & Service Manual and Chilton Body & Frame Manual do not carry advertising.

# CHILTON AUTOMOTIVE PUBLICATIONS and Services Chestnut and 56th Streets Philadelphia, Pa.

We build Shock Absorbers for the heaviest conveyances in the world—also the lighter vehicles. Monroe has been manufacturing Hydraulic Shock facturing Hydraulic Shock Absorbers for 16 years; for the manufacturers of the manufacturers America's finest automobiles.

We build Hydraulic Shock
Absorbers in sizes capable
of controlling the sprung
weight of the heaviest
conveyances.







● The Railroads use Monroes because of their efficiency and durability. Since 1938, over 70% of all railway passenger cars built have been equipped with Monroe "Airplane Type" Hydraulic Shock Absorbers.

Monroe's patented features incorporate the most improved principles in Shock Absorbers; our engineers have pioneered all major developments of Shock Absorbers.

Monroes have proved their superiority in every country and every climate of the world.

Monroe Hydraulic Shock Absorbers for Tanks, Blitz Buggies, Trucks, Busses, Commercial Cars, Quads, Jeeps and Automobiles.

The experience of our engineers may be of value to you in solving your problems.

MONROE AUTO EQUIPMENT CO. MONROE MICH.







#### How we pit DULUX against the worst weather

Part of the pre-testing of your DULUX Finish takes place on Du Pont "Paint Farms." Spotted over America, these "farms" expose the finish to actual weather conditions—blazing sun, salt air, fog, wind, rain, sleet and snow—to make the finish prove itself. This is just one of many scientific steps in pre-testing a DULUX Finish . . . before it's offered to you!

#### Today the "finish" is more important than ever!

THE way things look now, a fender or panel is going to be hard to replace... not to say anything about the truck or body. So that makes the proper protection of your trucks more vital than ever, if you're to get uninterrupted and profitable operation. This gives you four good reasons for using DULUX on your fleet:

- 1. It gives a hard, tough film that resists scratches and bangs—for full protection against rust.
- 2. It goes on easily, dries quickly. Gives high gloss without rubbing. Cuts labor cost of painting. Gets the fleet rolling sooner.
- 3. Keeps its sparkling beauty and full protection longer. Equipment goes to paint shop less often—spends more time on road.
- 4. Makes the fleet sparkle. Makes it a better advertising medium for you.
- E. I. DU PONT DE NEMOURS & CO. (INC.), Wilmington, Delaware



# FREE!



These numbers agree with the numbers before the paragraphs below. They are also the same as the numbers of the pages on which manufacturers' advertisements appear. Check numbers on the post card, corresponding to information desired. Mail it to us. We'll forward your request to the advertisers. Their salesmen may call on you.

# Over 100 Ways to SAVE MONEY In the Operation of Your Fleet

Note to Advertisers and Advertising Agencies

Forms for This Feature Close FINALLY on the 19th of the Month Preceding Publication Date. These Paragraphs Are Written from Current Advertising. Get It Here on Time.

- Another example of REO preference among large fleet operators is manifest on this month's Front Cover. Check postcard, or write for information about tailored transportation.
- The finish on the TIMKEN Bearing increases bearing precision, lengthens service life and reduces wear. Explanation on Inside Front Cover. Write or check postcard for further details.
- BC FOUR-WHEEL-DRIVE enables you to haul more tonnage, cover more miles—at less cost per ton-mile. See Back Cover. Write for details, or check postcard.
- Stewart-Warner Motor Mile Tachometers show clearly the "economy range" of motor speed for greater operating efficiency. Clip coupon on gage 1, or write for complete data.
- MARMON-HERRINGTON All-Wheel-Drive goes over desert, plain and field; neither hub-deep mud, sand nor snow can stop it. See page 2. For details, write or check postcard.
- Now it's a question of HAVING to add years to motors. See how it can be done with DOLE Thermostats on page 3. See your jobber, write or check postcard for details.
- TEXACO cleanses as it lubricates. Keeps piston rings free, protects bearings. Read all about it on pages 4-5. Check postcard or write for more details.
- Superior Galvannealed gives bodies a double life. Zin: coating underneath paint protects life and lustre of the finish. See page 6. For complete details, write or check postcard.
- 7 Read the part lubrication plays in the war program on page 7. Write LINCOLN ENGINEERING CO. for details, or check postcard.
- DRY-ZERO Corp., by increasing stock, and finding new sources of supply, has averted a shortage of Dry-Zero Insulation. See page 8. Write for prices, or check postcard.
- Another satisfied user states his case for CHAMPION Spark Plugs on page 9. Get detailed spark plug information by writing, or check post card.
- 10 "TIMKEN AXLES offers a new booklet "How Tires Affect Axles," on page 10.
  Truck owners, dealers, service men will find it helpful. Write today, or check postcard.
- STANDARD OIL CO. Automotive Engineers are helping fleet operators all over the country to cut costs. See page 11. Write for in-

formation about what they can do for you or check nostcard.

- 12 See the HALL Equipment shown on page 12, then write direct to the factory for more complete information, or check postcard.
- Their unfailing performance on the job makes it safe for you to depend on AUTO-LITE Automotive Electrical Units. Read page 13. Write or check postcard for more information.
- 14 SIOUX Discs are flexible for concave, convex and reverse curve sanding. See page 14. For complete details, write direct to ALBERT-SON & CO., or check postcard.
- HEIN-WERNER Hydraulic Jack saves on page 15. Write for complete information, or check postcard.
- "Service to transportation is service to the nation." INTERNATIONAL HAR-VESTER CO. reports on page 16. Check postcard or write direct for information about what they can do for you.
- 39 EXIDE BATTERIES pass the test of the open road. There is one for every size and type of motor vehicle. See page 39. Get full particulars by writing, or check postcard.
- 41 Running light or rolling heavy, FEDreeds for power, dependability, lower operating costs. See page 41. For facts, write or check postcard.
- 43 LINDSAY STRUCTURE'S prefabricated construction requires no riveting or welding. Can be assembled by unskilled workers. Read page 43. For details, write or check postcard.
- 45 All units of MIDLAND Power Brake equipment are completely interchangeable in fleet operation. Story on page 45. Get full particulars by writing, or check postcard.
- 46 For a quick-tightening, perfect leak-proof hose connection on radiators, heaters and booster brakes, investigate WITTEK Noc-Out Hose Clamps. Page 46. Write or check postcard for details.
- 48 HANSEN HARDWARE provides defense against breakdowns, time lost through repairs. See illustrations on page 48. Write for catalog, or check postcard.
- 49 ind a truck can do to "keep 'em flying" is told by the WHITE MOTOR CO.
  on page 49. For more complete information, write
  direct or check postcard.

- 50 See the pictures on page 50, and learn how to get up to double battery life in your trucks and buses. Write OWENS-CORNING Fiberglas Corp., or check postcard for more information.
- 60 Spend two screws and two minutes to install the SERVIS RECORDER and you'll save time and money; guard against waste. Story on page 60. Write for details, or check postcard.
- 61 KINGHAM TRAILER CO. is proud to be of service to the cause of Victory. See their interesting way of saying it on page 61. Check postcard or write for trailer information.
- 62 AHLBERG Ground Ball Bearings are repage 62 to see how you can use old bearings. Check postcard, or write for particulars.
- 63 See the G-E MAZDA Auto Lamps on page 63. These "all-glass" beam lamps shed 50% more light than pre-1940 types. Write for details, or check postcard.
- 64 When you buy equipment that won't need early replacement, you're helping win the war. Investigate EDISON Spark Plugs, page 64. Check postcard or write for complete details.
- 65 Motors must move the materials needed to build ships to defend the nation. WAUKESHA Engines are doing a twenty-four hour job. Story on page 65. Check postcard or write for details.
- 66 HOOF PRODUCTS CO. gives some interesting facts about Governors and Tires on page 66. Write today for complete information, or check postcard.
- The needs of a nation at war are not served only at the firing line. DIAMOND T explains on pages 67-68, and also presents a letter from a satisfied customer. Check postcard, or write for more information.
- 69 See the WEATHERHEAD fittings and fuel lines, page 69, as replacements to keep your trucks operating in top condition. Check postcard or write direct for additional data.
- 70 See why fleet servicemen prefer the FOREMAN Fast Charger on page 70. Check postcard, or get full particulars by writing
- 71 SEALED POWER Piston Rings are really engineered; that's why they fit better, work better. Read page 71. For complete details write direct or check postcard.

### Over 100 Ways to Save Money

(Continued from Preceding Page)

- 72 GRICO Two-Axle Drive gets maximum from moderate-powered trucks. Story on page 72. Check postcard, or write for detailed information, illustrated circulars.
- 74 FULLER is busy on defense transmissions. See the latest accomplishment on page 74. Write or check postcard for information other Fuller products.
- 75 Stop oil-pumping, check cylinder wear with HASTINGS steel-vent Piston Rings. See page 75 Secure complete data by writing, or check postcard.
- 76 In these times when production counts so greatly, don't guess at performance. Be certain with AIRTEX Fuel Pumps. See page 76. Check postcard or write direct for more information.
- 77 AMERICAN BRAKEBLOK offers three types of heavy duty brake lining—manually operated, vacuum-booster systems, air-brake equipment. Read about them on page 77. Write or check postcard for complete information.
- Read the interesting letter from a satisfied user on page 78. Write AMERICAN SAFETY TANK CO. for details on how to "keep 'em rolling—longer"; or just check postcard.
- 79 CASITE frees motors for quick pick-up and hetter gas mileage. It is a remedy for out-of-tune Horsepower. See page 79. Check postcard, or write for complete information.
- 80 See the EBERHARD Hardware items pictured on page 80, then write for complete catalog, or check postcard for added details.
- 81 See page 81 for the part THERMOID

  Brake Linings play in keeping a fleet
  moving through New York City traffic. Check postcard, or write for more information.
- 82 Five reasons why large fleets choose REYCO Brake Drums are given on page 82. Write for catalog 22-D or check postcard.
- WOLF'S HEAD Motor Oil and Lubes are prepared to save you money in fleet operation. Read their plan on page 83. Check postcard, or write for complete information.
- 84 BOLSER Safety Equipment is designed for efficient operation with greater eye appeal. See illustrations on page 84. Check postcard, or write for details.
- 85 There is a WIX FILTERFIL for your oil filter; there is one for every popular oil filter now in use. Read page 85. Write for the facts or check postcard.
- 86 Victory must be won at home as well as on the fighting fronts. GRAFILD Brake Linings provide effective defense against accidents. See page 85. Write WORLD BESTOS CORP. for details or check postcard.
- 87 An actual case of per-mile savings with PIERCE GOVERNORS is related on page 87. Get full particulars regarding your own maintenance costs by writing, or check postcard.
- SNAP-ON'S new Speed Hone enlarges, trues and finishes holes in all types of bushings and bearings, in all kinds of metal. See page 88. For details, check postcard or write.
- SNOGO has over 15 years of actual field operation behind it; dependable, assures an open road. See page 89. Check postcard, or write for details.
- **90** ZENITH Gov-U-Retor gives a double check on waste and wear. See how on page 90. Write direct for full particulars, or check postcard.
- 91 FEDERAL-MOGUL Oil-control Bearings was and oil and wear on metal parts. Story on page 91. Get added details by writing, or check postcard.

- 92 Designed for present-day overloads, EBpage 92. For more information, write or check post-
- 94 FERODO Brake Linings and Błocks assure smooth, quick stops in any emergency, in any kind of weather. Read page 94. Check postcard, or write for complete details.
- 95 GUIDE auxiliary lamps are built to stand up under the toughest fleet assignments. Several models shown on page 95. Write or check postcard for complete information.
- 98 Full time-top notch Truck performance, low maintenance costs are vital to the War Program. Investigate WEIDENHOFF Distrib-U-Scope, page 98. Check postcard, or write for details.
- PRAYBESTOS Heavy Duty LININGS have a margin of safety of 300% in excess of the vehicle's normal rated capacity. Read about it on page 99. Write or check postcard for the new Raybestos Truck Recommendation Guide. It's free!
- 101 GENERAL Tire & Rubber Co. explains
  Kraft system of tire renewing on page
  101. Investigate further by writing, or check postcard.
- 102 "Z-Action" of HICKMAN full-floating driver a bumpless ride. Facts on page 102. Get more information by writing, or check postcard.
- To keep the wheels turning, clear the roads with WALTER Snow Fighters. Read page 103. Get the complete story by writing, or check postcard.
- 106 Heavy duty loads confirm KELLOGG-MERICAN'S claim of continuous operation, low power consumption. Read page 106. For full particulars, write direct or check postcard.
- 107 Today's BENDIX-WESTINGHOUSE repcause he learned his business by doing the work. Read about him on page 107. For more information, check postcard or write.
- 110 Correct holding power for balanced action, smooth positive stopping without grabbing—read the rest of the story about GATKE Brake Linings on page 110. Check postcard or write for details.
- 111 See why you can get more mileage out of your tires with a TRAILMOBILE Trailblazer, on page 111. Get full particulars by writing, or check postcard. Free booklet.
- 112 Accidental uncoupling in the drawing road it's dangerous. See page 112. Write for details of the A-S-F Fifth Wheel or check postcard.
- 114 Read how one cab company reduced oil consumption 1/3, on page 114. To see how you can do the same write for facts about the VALVOLINE Fleet Laboratory Service, or simply check postcard.
- 115 The MONMOUTH Clutch Specialist Manual, offered on page 115, gives exact information on how to locate trouble, repair, replace and adjust every known make of clutch. Check postcard or write direct for added details.
- 116 Three suggestions to help you reduce fleet maintenance costs and eliminate loss of time on page 116. Write IMPERIAL Automotive Products for Catalog, or check postcard.
- 118 ROYAL has become world's No. 1 Typewriter through attention to detail. Read the amusing instance on page 118. Check postcard or write for more information.
- 123 Good Inbrication is required for long engine wear; clean oil is a necessity for good Inbrication. Avoid trouble in your fleet by keeping oil clean with PUROLATOR. See page 123. Check postcard or write direct for more information.

- 127 MONROE Shock Absorbers are available for every type vehicle; capable of controlling the sprung weight of the heaviest conveyances. Read page 127. For details, write or check postcard.
- 134 KESTER Cored Solders are your assurance of perfect freedom from mechanical and electrical difficulties arising from solder failures. Story on page 134. Write or check postcard for details.
- 135A Maintenance is important to victory. Investigate WILLIAMS WRENCHES for your own use. Read about them on page 135, check postcard or write direct for more information.
- 135B If your trucks are in the defense line, keep them rolling safely with YANKEE Safety Equipment. Illustrations on page 135. Write or check postcard for details. Catalog C4.
- 135C The Service Spring Co. offers a line of Springs on page 135. Write or check
- 136A Now it's a question of making tires last.

  L & H Wheel Balancing Weights ease
  the situation. Read about them on page 136. Write
  HARLEY C. LONEY CO. for free sample, or check
  mostered.
- 136B ELASTC STOP NUTS are self-locking; they can't be loosened by vibration sheek or prolonged hard wear. See page 136. Descriptive literature upon written request, or check postcard.
- 136C If you're replacing universal Joints, you Joints. See page 136 and check postcard for more information.
- 137A PERFECT SEAL Gasket Paste still plays vention of leaks is necessary. See page 137. Check postcard, or write direct for details.
- 137B COLE-HERSEE, serving civilian defense.

  137. For additional facts, write direct or check postcard.
- 137C You determine the desired temperature of your trucks and the BAKER Self-Powered Truck Refrigerating System will maintain it througheut the trip. See page 137. Write or check post-card for facts.
- 138A You cannot afford the possible crippling of your fleet through loss of tires. Brand them as a safety measure with the EVERHOT branding iron. Shown on page 138. Write or check postcard for details.
- 138B Bull Dog Trailer Hitches—drop forged.
  Check postcard, or write HAMMER BLOW TOOL
  CO. for free literature.
- 138C GUNK X-11—a self-emulsifying deit on page 138. Check postcard or write for full details.
- 138D There are six dependable models of CUMMINS Diesels, ranging from 33 to 200 hp. See page 138. Write today for additional information, or check postcard.
- 138E Write WHITEHEAD STAMPING CO.. page 138, to see why you should specify WHITEHEAD when you need washers; or, for convenience, just check postcard.
- 139A The K-D compressor shown on page 139, is speedy for one man operation. Check postcard, or write for catalog.
- 139B WONDER WELD is a permanent seal. Read how a racer used it on page 139. Check postcard or write MILLER MFG. CO. for details
- 139C There are 50 KING-BEE styles to meet every rear view need. Illustrations on page 139. Check postcard, or write AMERICAN AUTOMATIC DEVICES CO. for details.

- 139D There is a complete line of ANTHONY sign from 5 to 30 tons. Illustrations on page 139. For more information, write or check postcard.
- 140A Keep Jubrication at top effectiveness by keeping motors free of studge. See how easily it can be done with MAGNUS Metaffin on page 140. Free handbook. Write or check postcard.
- 140B Speed Wash Fountain Brush cuts working time in half, is easily replaced, handle connects with any standard size hose coupling. See page 140. Write MILWAUKEE DUSTLESS BRUSH CO. for details, or simply check postcard.
- 141A K-D Lighting provides the right light for the right job. Read page 141. See your K-D Jobber, check postcard, or write direct for complete information.
- 14.1B OSHKOSH Four-Wheel Drive Trucks have capacity of 1½ to 10 tons. See page 141. Write for complete information, or check posteard.
- 141C For information about TYSON tapered roller bearings, write ROLLER BEARING CORP., page 141. Or just check postcard for details.
- 141D Looking for a consulting, designing or operating engineer? Then get the address of BRACE ENGINEERING CO., INC., on page 141, and write or check postcard for full details.
- 141E AUSTIN Trailer Equipment Co. makes sage 141. Descriptive literature upon request, or check postcard for information.
- 141F Investigate W.G.B. Clarofiers and see how you can get up to as much as 50% longer service between overhauls. See page 141. Check postcard, or write for additional data.
- 142A SATTLER Record provides a complete check of a truck after each day's run. Entirely self-contained. Shown on page 142. Write for details, or check postcard.
- 142B You can find an AVAILABLE Truck for your needs—capacities from 1½ to 10 tons. See page 142. Write for bulletin, or check postcard.
- 142C No tools are required when you repair chains with MONKEY LINKS. See page 142. Free samples to Fleet Owners. Write Flower City Specialty Co., or check postcard.
- 142D Investigate HASKELITE for body, roof, door, panel and floor construction. See page 142. Write new for details, or check postcard.
- 142E OLDGORGE Tools are products of "Masters in Toolcraft." See page 142. Write Quality Tool Corp. for information, or check postcard.
- 143A Another way to help in the defense prorepair jobs by using OAKITE. See how on page 143. Check postcard, or write for more information.
- 143B Guard engine performance with SAFETY SPEED Control. Shown on page 143. For full particulars, write direct, or check postcard.
- 144A Take safety steps for icy weather, equip your truck with FULTON DEFROSTING ACCESSORIES. See page 144. For more information, write or check postcard.
- 144B The JONES Portable TACHOMETER gives you a direct, instantaneous reading. Details on page 144. Get further facts by writing, or check postcard.
- 144C DART TRUCKS—especially designed for heavy duty off-the-highway service. See page 144. Have engineer visit and analyze your operation. Write or check postcard.
- 144D For running-in new and rebuilt engines—day (ACHESON) Colloidal Graphite. See page 144, and check postcard.
- 144E Efficient charging means longer battery life. See the VALLEY Superduty Charger on page 144. For more information, check postcard or write direct.
- 144F Investigate CLE-AIR hydrau-matic shock eliminators for a smooth, safe ride at lower cost. See page 144. Check postcard, or write for full details.

- 144G Write for catalog 38AC and 38BC on FRINK SNO-PLOWS. Read page 144, or just check postcard for details.
- 144H LIBBEY-OWENS-FORD announces its radio program on page 144. For safety plate glass facts, write direct, or check postcard.
- 1441 Send today for your free wall chart offered by CARTER CARBURETOR CORP. on page 144. Or just check postcard.
- 145A RAMCO 10up Piston Rings are specially built for fleet operation. See page 145. Write for detailed data, or check postcard.
- 145B Traction and THORNTON are road partners. See page 145. Write THORN-TON TANDEM CO. for details, or check postcard.
- 145C SKF Ball and Roller Bearings are vital to low imiteage costs. easy operation, maintained schedules. See page 145. Write or check postcard for complete information.
- 145D SIGNAL-STAT Directional Signal Switch is burn-out proof. See page 145. Write today for complete particulars, or check postcard.
- 145E Investigate STERLING long-lived Motor Trucks when you're conserving for defense. See page 145. Get facts by writing, or check postcard.
- 145F Six reasons for using Plastic Body Mouldings in motor trucks are given on page 145. For more information, write ERLINDER-PLATT SALES CORP., or check postcard.
- 145G GLOBE does a battery's toughest jobreplacement service. Sp'nming power . . . split-second starting. See page 145. Write Globe-Union, or check postcard for details.
- 145H CHAMP-ITEMS, INC., has oversize rear wheel studs for all trucks. See page 145. Ask your jobber, write or check postcard for information.
- 146A C. R. DANIELS, INC., renews a pledge of service on page 146. For information about "DANDUX" Canvas Products, write direct, or check postcard.
- 146B FITZGERALD MFG. CO. delivers its message briefly on page 146. For complete information, write or check postcard.
- 146C BURCH dump bodies and hoists fill the bill for power, stamina and economy. See page 146. Descriptive literature upon written request, or check postcard.
- 146D See the AUTOPULSE Electric Fuel Pump pictured on page 146. Write for detailed literature, or check postcard.
- 146E PERMALUX "Kolorfilm" decals will give your fleet appearance with economy. Facts on page 146. For further facts write, or check post-card.
- 146F There is a complete line of HEIL Bodies and Hoists for all types of service. Read page 146. Write for catalog, or check postcard.
- 147A KINNEAR Truck Doors open upward and coil out of way. Pictured on page 147. Write for details, or check postcard.
- 147B FRUEHAUF Trailers are prepared—to help you get more work. See page 147. Check postcard or write for complete information.
- 147C MEEHANITE Heavy Duty BRAKE Inings. See page 147. Descriptive literature upon request, or check postcard.
- 147D TRUCKSTELL converts Ford and Chevrolet Trucks for extra heavy or special services. Also distributes tested and approved Truck Equipment. Page 147. For details, write or check nosteard.
- 147E LINK-BELT Roller Bearings—for front wheels, differentials, and rear axles. See page 147. Ask your Jobber, check postcard, or write for more information.

- 147F Keep the road open with a BAKER Plow and you'll be on time for deliveries. See page 147. Check postcard or send for Bulletin 829.
- 1476 For better service in the long run, investigate GOODRICH Silvertown Tires today. Read page 147. Send for more information. or check postcard.
- 147II Don't take chances with a slipping emer-BRAKE CONTROL on page 147. Check postcard, or write for complete information.
- 1471 MICHIANA Oil Filters lower filter maintenance costs. See page 147. Check postcard or write for Bulletin 839.
- 148A Even seat cushlons must serve longer mow.

  KARPEX, Special processed semi-sponge rubber in KARPEX, page 148, assures extra miles of comfortable low cost riding. Write for details, or check-neckard.
- 148B Here's the gate that offers you full protection and yet takes a minimum amount of space . . the ATLAS COLLAPSIBLE GATE. It's shown on page 148. Write or check postcard for complete details.
- 148C AUTOCAR Trucks are precision-built. Read page 148. For more complete information, write direct or check postcard.
- 148D Spun plass retainer mats are the service secret of KATHANODE, the long-life Battery. See page 148. Write for complete information, or check postcard.
- 148E Now that winter is here, investigate the protection of CLAW Double-Duty TRUCK CHAINS. See page 148. Secure complete data by writing, or check postcard.
- 148F Put "system" in fuel checking with BOWSER AKRAFLO Fuel Consumption Meter and you'll put dollars in your pocket. Model pictured on page 148. Send for details, or check postcard.
- 148G ZEHR Collapsible GATES are safe, easy and simple to operate. Pictured on page 148. Write for details and prices, or check postcard.
- 148H Holland Model V-400 Vertical Lift Landing Gear is powerful, rugged, dependable. See page 148. Write HOLLAND HITCH CO. for catalog, or check postcard.
- 149A Baldor's HANDY Super Services is a quick charger. Facts on page 149. Write or check postcard for complete information.
- 149B For information on Heavy Duty and Special Motor Trucks, write to DUPLEX TRUCK CO., page 149, or check postcard.
- 149D ZOLLNER Heavy Duty Pistons are well known on trucks and buses. See page 149. Write for complete information, or check post-card.
- 149E Wash trucks better in half the time with Flour City's FOUNTAIN BRUSH. See page 149. Send for literature, or check postcard.
- 149F MICRO-LINOR tells when wheels are rolling in line. See page 149. Write TESTING APPARATUS CO. for details, or check
- 1496 McKAY Multi-Grip chains for double bar-reinforced. See page 149. Check postcard or write for further details.
- 150 SPICES pledges itself to the fulfillment of a well-known resolution. See page 150. For information about Spicer products, write or check england.
- 152 Wiring gets worn, oil-soaked, generally says, "Check the wire on every job." Send today for particulars, or check postcard.

# THE APRIL FLEET OPERATORS' REFERENCE ANNUAL of COMMERCIAL CAR JOURNAL

-will reach the cream of the civilian motor vehicle field in war time.

Most fleet trucks are now in preferential classifications. This is particularly important from your standpoint, as fleet trucks are serviced for the most part, in their own shops. You can sell to them.

This April Annual Issue is read by the superintendents, and others in charge of maintenance, in the 25,000 largest truck fleets in the United States. They are the men who keep 'em rolling.

So, the truck fleet market in war time turns out to be the cream of the civilian motor vehicle field—plus a service industry of infinite proportions.

And, COMMERCIAL CAR JOURNAL, in April, will present your sales and service story, when and where it can do the most good.

Advance reservations for advertising space forecast an imposing issue, for which final forms are scheduled to close on March 19th.

# COMMERCIAL CAR JOURNAL

A CHILTON Publication

Chestnut & 56th Sts.

0

Philadelphia, Pa.

132



The little yellow boys are having fun. Like rats, they've nipped us at Pearl Harbor and swarmed over Luzon. They think America is hopelessly divided. They grin at our labor troubles. They snicker at our long-winded debates of urgent war measures. They laugh out loud at the interstate transportation barriers that hamper our sixty billion dollar armament program.

And don't we give them reason for cheerfulness? Building 185,000 planes, 75,000 tanks, scores of warships, calls for millions of ton-miles of truck haulage. How will we ever do it if we don't cut out the nonsense of stopping trucks at state boundaries to weigh the truck, inspect the load, study the color of the driver's eyes and sniff his breath? A good example of the kind of muddled thinking that has snarled up truck transportation, is the treatment of single-unit sixwheel trucks in the various states. Automotive engineers know that this type is easier on the highway than any other (by Government impact tests), safer (by I.C.C. accident reports and insurance statistics), more economical (by owners' cost reports). Yet there isn't a state that gives the sixwheeler a fair break.

If we want to settle little Hashimura's hash, we'll have to forget interstate jealousies and get together like Americans—NOW.

THE TRUCKTOR CORPORATION
156 WILSON AVENUE . . . . . . NEWARK, N. J

# Trucktot AXLES



# ... at top efficiency with KESTER CORED SOLDERS

- WITH MANY TRUCK SCHEDULES vital to the national war effort—and with maintenance of operating efficiency more important than ever before—Kester Cored Solders are your best assurance of perfect freedom from mechanical and electrical difficulties arising from solder failures.
- That's because Kester Cored Solders are permanent. They're made only from pure virgin metals, are free from the impurities that cause Solder failure! They stand up under bending, vibration, shock, and the expansion and contraction due to temperature extremes.
- Kester Acid-Core Solder is the general purpose solder for all-around repairs, the "old stand-by" in maintenance shops everywhere. Kester Rosin-Core Solder is specially designed for all electrical work, with a patented, plastic rosin flux that won't cause corrosion or injure insulating materials. It eliminates an important fire hazard.
- Use Kester Radiator Solder to close leaks and cracks quickly, permanently! The special, more active flux and freer-flowing alloy save shop time on important radiator repairs, even when leaks are hard to reach.
- Depend on Kester Cored Solders to help cut shop costs and raise the operating efficiency of your fleet! Order them from your wholesaler.

#### KESTER SOLDER COMPANY

4205 Wrightwood Avenue, Chicago, Illinois Eastern Plant: Newark, N. J. Canadian Plant: Brantford, Ont.

KESTER CORED SOLDERS

# Repairmen For fifteen years the CHILTON Flat Rate and Service Manual

has been the leading
Flat Rate Book in accuracy and dependability. It has led the
way always with new
and practical features.

Be sure the name

# **CHILTON**

is on the Flat Rate you buy.







Day by day the truth sinks in: this is a mechanized war, both at the front and at home. Civilian goods and war supplies must move — quick, safe, sure, in ever-growing volume.

Now is the time when you and your service crew will appreciate more than ever the high efficiency and long life of your Williams Wrenches, especially with occasional additions to round out your supply. You'll find them among the trustiest weapons you have, to Keep 'em Rolling.

J. H. Williams & Co., "The Wrench People", 225 Lafayette St., New York Western Warehouse and Sales Office, Chicago • Works, Buffalo

FREE TO NEW MECHANICS and all other wrench users!
"How to Select and Use Wrenches"—a 28-page booklet to save minutes, muscle and money. Send for it today.





\*\*\*\*\*\*\*\*





Help to lick the tire shortage by balancing the wheels on your customers' motor trucks with the new L & H Balancing Weight. The only weight made in 7 different shapes or contours to fit any and all styles of both rims and rings. The only weight adaptable to both static and dynamic wheel balancing. The only weight graduated in ounces so that it may be cut down to any number of ounces desired. New! Different! Sensational! desired. Send for FREE SAMPLE.



HARLEY C. LONEY CO.

16877 Wyoming Detroit, Mich.

H Wheel Balancing Weights

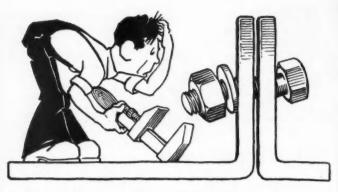
Everything you want in UNIVERSAL JOINTS



Whatever your requirements, if your problem is to transmit power at an angle, our field and factory experience of more than 30 years is at your command. Our Engineering Department will gladly submit quotations covering your requirements.

BLOOD BROTHERS MACHINE COMPANY DIVISION OF STANDARD STEEL SPRING COMPANY ALLEGAN, MICHIGAN

SPECIFY god Brother



### Having trouble WITH LOOSE BOLTED FASTENINGS?

Try Elastic Stop Nuts . . . they are not only self-locking, they hold fast with a resilient grip that cannot be loosened by vibration, shock, or prolonged hard service. Samples for testing will be furnished without charge.



>> Write for interesting folder explaining the Elastic Stop self-locking principle.

ELASTIC STOP NUT CORPORATION 2349 VAUXHALL ROAD . UNION, NEW JERSEY

Pastic



#### Keep them rolling with ready-lined brake shoes

With a few Packaged sets of MILEY Ready Lined Brake Shoes in reserve, relining of brakes becomes a matter of minutes—just slip out the old shoes, slip in the new ones and adjust the brakes. Then take your old shoes to your MILEY Jobber and exchange them "over-the-counter" for another packaged set of lined shoes and you're ready for the next car or truck.

Because MILEY manufactures both brake shoes and brake lining, every shoe in a MILEY Set is certain to be in perfect condition (is factory inspected) and lined with the correct linings for each specific brake mechanism.

Complete installation and adjustment instructions are included with every set of Miley Lined Brake Shoes. Write for Catalog and MILEY Brake Shoe Chart.

1062 W. ADAMS STREET

CHICAGO, ILLINOIS

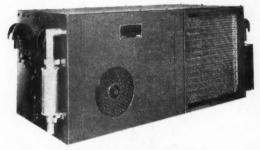
HOW COLD DO YOU WANT YOUR

You select the temperature — BAKER will maintain it!

SELECT any temperature you wish from 15 degrees below zero to 40 degrees above . . . set your thermostat . . . and rest assured that the BAKER Self-Powered Truck Refrigerating System will maintain that temperature throughout the trip—no matter how hot the weather or how many stops the truck makes en route!

Enclosed type B A K E R Truck Refrigerating Unit. BAKER equipment requires no outside power source. The unit operates whether the truck is moving or standing still—whether the tractor is coupled to or separated from the trailer. *Operation is entirely automatic*.

The BAKER unit is available in either the open type (for installation *inside* the trailer) or the enclosed type (for installation *beneath* the trailer). Compact design reduces space requirements to a minimum. Write today for complete information.



BAKER
ICE MACHINE CO., INC.

B A KE R

TRUCKS?

Sales and Service in Principal Cities

AUTHORITY ON MECHANICAL COOLING FOR 37 YEARS



In peace time, the nation's leading automotive manufacturers depended exclusively on PERFECT SEAL for production line use, and recommended it to dealers for continued proper servicing of their products.

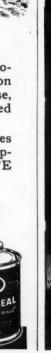
Now with their vast production facilities swung over to the building of vital war equipment, PERFECT SEAL GASKET PASTE continues to play an important part where complete prevention of leaks or seepage of oil, water, gasoline pressure or vacuum, or anti-freeze is essential.

For Repair Shop Use!

Insure continued operation of your customer's cars with the use of PERFECT SEAL, for perfect sealing.

At Your Automotive Parts Jobber

P.O.B. MFG. CO. INC. CINCINNATI





# Protect Your Tires NOW!



In today's emergency you cannot afford the possible crippling of your fleet by the loss of tires. "Keep 'em Rolling" by branding your tires to avoid theft. Keep accurate records of tire performance.

The Everhot Electric Branding Iron together with the Everhot Tire Cost System provides a sure check on the performance of every tire in your

The Everhot Electric Branding Iron costs only \$35, plus \$1 per letter for any characters wanted for initialing purposes, to go on the face of the disk. F.O.B. Maywood, Ill.; the Tire Cost System is free.

Write today for literature describing Everhot Branding Equipment and use the information to keep your trucks rolling through the emergency.

## Maywood,

#### BULL DOG TRAILER H **NEVER JAM** CAN'T RATTLE



SAFELY HANDLE ALL TRAILERS FROM LIGHTEST UTILITY TO HEAVIEST TRACTOR

The strongest, most efficient hitch made. Patented features assure maximum safety under toughest hauling conditions. In three sizes for light and heavy duty. Used by U. S. Govt. and largest trailer manufacturers. Tongue Ends for every type of tongue with hitch attached.

Also—Axle Assemblies, Trailer Parts. Write for new Free Literature. State any facts or advice wanted.

HAMMER BLOW TOOL COMPANY WAUSAU, WISCONSIN



#### SOMETHING **NEW! GUNK** X-11

- A Superior Substitute for Trichlore-thylene Degreasing
- Cold Tank Process . Effective Cleaning Results . . . Long Life
- Present Tank May with Shop Labor

**Engineering Data Sheets Available** 

THE CURRAN CORP., Mfg. Chemists, Malden, Mass.







# SPECIFY WHEN YOU NEED WASHERS

Catalog on Request



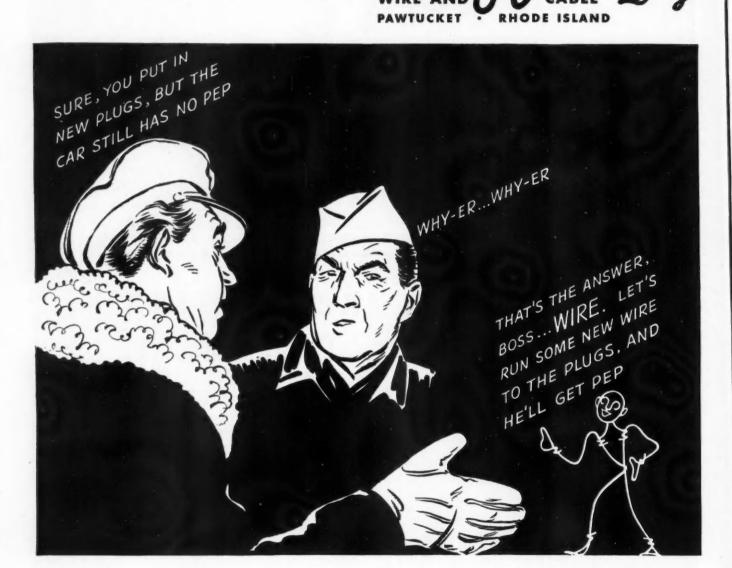
WHITEHEAD STAMPING CO. 1685 W. LAFAYETTE BLVD. . DETROIT, MICHIGAN

# COMMERCIAL CAR JOURNAL

Is the Leading Publication in the TRUCK FLEET Field



# When they kick about performance...it may be the wiring ...?



Old garden-hose leaks . . . so does old wiring. It gets worn, oil-soaked, and just generally run down. Make it a habit to check the wiring on every job that comes in for an engine tune-up and always install new wire with every new set of plugs.

High speed misses . . . hard starting . . . and loss of power can frequently be traced to the need for new battery cables and ignition wire. Use Wiry Joe, the line with top quality, to keep your units on the road . . . at a lower price that will help keep your upkeep costs down.

√ Check the wire on every job!

### THE TIMETABLE OF ALUMINUM FOR DEFENSE

up to September 10, 1941

1938 Sept. Munich.

Oct. Czechoslovakia invaded.

Nov. Alcoa inaugurates \$26,000,000 expansion program.

Alcoa produced 287 million pounds in 1938; had more than a year's supply on hand.

1938

1939 Jan. New extrusion and tube mill begins operation at Lafayette, Ind.

Feb. Start building an excess stock pile of airplane sheet.

Mar. Bohemia and Moravia occupied.

Apr. Albania invaded; Congress authorizes Army to acquire 6,000 planes by July, '41, and Navy 3,000 by '44. Aluminum for all these would take about two months 1941 production.

Sept. Poland invaded; U. S. Neutrality proclaimed; limited National emergency

Alcoa authorizes new metal-producing capacity at Alcoa, Tenn.

Nov. Finland invaded; Cash-and-carry act signed. Alcoa completes \$26,000,000 expansion program, begins plans for a larger one.

Dec. U.S. protests blockade of German exports. New metal-producing plant authorized at Vancouver, Wash. 1939 production 327 million pounds; 215 million on hand. 1940 Jan. First request for defense appropriation in Budget Message.

Alcoa announces \$30,000,000 more plant expansion.

Mar. Alcoa reduces price of aluminum from 20c to 19c, starts construction of Vancouver, Wash., plant.

Apr. Denmark and Norway invaded.

May Low countries invaded; National Defense Advisory Commission named. New metal-producing unit begins operation at Alcoa, Tenn.

June Dunkerque; France capitulates. Additional metal-producing unit authorized at Alcoa, Tenn.

Congress lifts previous limits on numbers of planes. Air offensive against England begins; 50 destroyers exchanged for island air bases.

Alcoa reduces price of aluminum ingot from 19c to 18c; capacity for making alumina increased.

Sept. Egypt invaded; Selective Service Bill passed. First metal manufactured at Vancouver, Wash., plant and new units for additional capacity authorized. Oct. Rumania invaded.

Alcoa authorizes another \$150,000,000 for expansion.

Nov. 26 bombers on contract turned over to Britain. Alcoa reduces ingot price from 18c to 17c; additional capacity authorized at Badin.

Alcoa 1940 production 413 million pounds; 154 million on hand. Dec.

OPM established; NDAC says aluminum supply adequate to meet October, 1941 Jan. 1940, estimates of requirements. Alcoa authorizes additional capacity at Alcoa, Tenn.

Feb. Aluminum put on priorities.

Mar. Lend-lease bill signed.

Alcoa produces 44,000,000 pounds of metal this month.

Apr. Yugoslavia invaded; U. S. occupies Greenland.

May 150 million-pound-annual-capacity plant at Vancouver, Wash., completed and operating at capacity.

June Crete lost; Russia invaded.

July New Government aluminum plants authorized; U. S. occupies Iceland; Japan moves into Indo-China. Alcoa produces 53,000,000 pounds this month; Badin unit authorized November,

1940 starts operation. Aug. U. S. Government announces Aluminum Company of America will build

and operate 3 Government-owned aluminum smelting plants and one for making alumina.

Alcoa announces ingot price reduction to 15c, effective October 1, 1941.

Alcoa and T. V. A. conclude agreement to unify two great hydro-electric power systems in the Tennessee Valley, which will add at least 200,000,000 pounds to America's annual aluminum producing capacity. Alcoa produces 54,000,000 pounds of aluminum this month.

Sept. Sites selected for two of the Government-owned aluminum plants and for the alumina plant; railroad, water, and sewage facilities provided; construction contracts being executed.

Alcoa starts construction of 325,000,000 pounds per year additional alumina producing capacity at its own Mobile plant; construction started on additional capacity for 22 million pounds of aluminum fluoride, and 23 million pounds of cryolite annually at East St. Louis; eight new extrusion presses purchased to bring expansion up to 238% of pre-war capacity.

Excess stock pile of aluminum airplane sheet started in February, 1939, being maintained at 5,000,000 pounds.

ALUMINUM. DEFENSE, AND YOU

> ALUMINUM COMPANY OF AMERICA



# Again-This Paper Industry Leader Chooses F

For the third successive time Whiting-Plover Paper Company, Stevens Point, Wisconsin, decided on an FWD truck as best qualified to "deliver the goods" on schedule — at lowest cost per ton-mile.

Their present FWD, in its first 100,000 miles - hauling heavy loads of Whiting-Plover quality papers in all extremes of road and weather conditions - set a record in low-cost maintenance - less than \$2.00 for replacements right up to the minute the speedometer clicked off the first 100,000 miles.... Such performance soon led to the purchase of this third FWD - a modern highway carrier unmatched in style and four-wheeldrive economy and performance.

> When you are about to buy your next truck consider all the facts that prompt so many truck operators to choose an FWD four-wheel-drive truck for safer, lower cost, more dependable, modern transportation.

THE FOUR WHEEL DRIVE AUTO CO. Clintonville, Wisconsin
Canadian Factory: KITCHENER, ONT.

Another **Essential Industry Better Served By FWD TRUCKS** 

